SEQUENCE LISTING

<110> Makielski, Jonathan C.
       Ye, Bin
       Ackerman, Michael J.

<120> Sodium Channel Alpha Subunit Variants

<130> 960296.98989

<150> 60/401,018
<151> 2002-08-02

<160> 21

<170> PatentIn version 3.2

<210> 1
<211> 6172
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(6048)

<400> 1
atg gca aac ttc cta tta cct agg ggc acc agc agc ttc cgc agg ttc   48
Met Ala Asn Phe Leu Leu Pro Arg Gly Thr Ser Ser Phe Arg Arg Phe
1   5   10   15

aca cgg gag tcc ctg gca gcc atc gag aag cgc atg gcg gag aag caa   96
Thr Arg Glu Ser Leu Ala Ala Ile Glu Lys Arg Met Ala Glu Lys Gln
                20   25   30

gcc cgc ggc tca acc acc ttg cag gag agc cga gag ggg ctg ccc gag   144
Ala Arg Gly Ser Thr Thr Leu Gln Glu Ser Arg Glu Gly Leu Pro Glu
            35   40   45

gag gag gct ccc cgg ccc cag ctg gac ctg cag gcc tcc aaa aag ctg   192
Glu Glu Ala Pro Arg Pro Gln Leu Asp Leu Gln Ala Ser Lys Lys Leu
        50   55   60

cca gat ctc tat ggc aat cca ccc caa gag ctc atc gga gag ccc ctg   240
Pro Asp Leu Tyr Gly Asn Pro Pro Gln Glu Leu Ile Gly Glu Pro Leu
65   70   75   80

gag gac ctg gac ccc ttc tat agc acc caa aag act ttc atc gta ctg   288
Glu Asp Leu Asp Pro Phe Tyr Ser Thr Gln Lys Thr Phe Ile Val Leu
                85   90   95

aat aaa ggc aag acc atc ttc cgg ttc agt gcc acc aac gcc ttg tat   336
Asn Lys Gly Lys Thr Ile Phe Arg Phe Ser Ala Thr Asn Ala Leu Tyr
                100   105   110

gtc ctc agt ccc ttc cac ccc atc cgg aga gcg gct gtg aag att ctg   384
Val Leu Ser Pro Phe His Pro Ile Arg Arg Ala Ala Val Lys Ile Leu
            115   120   125

gtt cac tcg ctc ttc aac atg ctc atc atg tgc acc atc ctc acc aac   432
Val His Ser Leu Phe Asn Met Leu Ile Met Cys Thr Ile Leu Thr Asn
        130   135   140

```
tgc gtg ttc atg gcc cag cac gac cct cca ccc tgg acc aag tat gtc        480
Cys Val Phe Met Ala Gln His Asp Pro Pro Pro Trp Thr Lys Tyr Val
145             150             155             160

gag tac acc ttc acc gcc att tac acc ttt gag tct ctg gtc aag att        528
Glu Tyr Thr Phe Thr Ala Ile Tyr Thr Phe Glu Ser Leu Val Lys Ile
                165             170             175

ctg gct cga ggc ttc tgc ctg cac gcg ttc act ttc ctt cgg gac cca        576
Leu Ala Arg Gly Phe Cys Leu His Ala Phe Thr Phe Leu Arg Asp Pro
            180             185             190

tgg aac tgg ctg gac ttt agt gtg att atc atg gca tac aca act gaa        624
Trp Asn Trp Leu Asp Phe Ser Val Ile Ile Met Ala Tyr Thr Thr Glu
        195             200             205

ttt gtg gac ctg ggc aat gtc tca gcc tta cgc acc ttc cga gtc ctc        672
Phe Val Asp Leu Gly Asn Val Ser Ala Leu Arg Thr Phe Arg Val Leu
        210             215             220

cgg gcc ctg aaa act ata tca gtc att tca ggg ctg aag acc atc gtg        720
Arg Ala Leu Lys Thr Ile Ser Val Ile Ser Gly Leu Lys Thr Ile Val
225             230             235             240

ggg gcc ctg atc cag tct gtg aag aag ctg gct gat gtg atg gtc ctc        768
Gly Ala Leu Ile Gln Ser Val Lys Lys Leu Ala Asp Val Met Val Leu
            245             250             255

aca gtc ttc tgc ctc agc gtc ttt gcc ctc atc ggc ctg cag ctc ttc        816
Thr Val Phe Cys Leu Ser Val Phe Ala Leu Ile Gly Leu Gln Leu Phe
            260             265             270

atg ggc aac cta agg cac aag tgc gtg cgc aac ttc aca gcg ctc aac        864
Met Gly Asn Leu Arg His Lys Cys Val Arg Asn Phe Thr Ala Leu Asn
            275             280             285

ggc acc aac ggc tcc gtg gag gcc gac ggc ttg gtc tgg gaa tcc ctg        912
Gly Thr Asn Gly Ser Val Glu Ala Asp Gly Leu Val Trp Glu Ser Leu
            290             295             300

gac ctt tac ctc agt gat cca gaa aat tac ctg ctc aag aac ggc acc        960
Asp Leu Tyr Leu Ser Asp Pro Glu Asn Tyr Leu Leu Lys Asn Gly Thr
305             310             315             320

tct gat gtg tta ctg tgt ggg aac agc tct gac gct ggg aca tgt ccg       1008
Ser Asp Val Leu Leu Cys Gly Asn Ser Ser Asp Ala Gly Thr Cys Pro
            325             330             335

gag ggc tac cgg tgc cta aag gca ggc gag aac ccc gac cac ggc tac       1056
Glu Gly Tyr Arg Cys Leu Lys Ala Gly Glu Asn Pro Asp His Gly Tyr
            340             345             350

acc agc ttc gat tcc ttt gcc tgg gcc ttt ctt gca ctc ttc cgc ctg       1104
Thr Ser Phe Asp Ser Phe Ala Trp Ala Phe Leu Ala Leu Phe Arg Leu
            355             360             365

atg acg cag gac tgc tgg gag cgc ctc tat cag cag acc ctc agg tcc       1152
Met Thr Gln Asp Cys Trp Glu Arg Leu Tyr Gln Gln Thr Leu Arg Ser
370             375             380

gca ggg aag atc tac atg atc ttc ttc atg ctt gtc atc ttc ctg ggg       1200
Ala Gly Lys Ile Tyr Met Ile Phe Phe Met Leu Val Ile Phe Leu Gly
```

```
tcc ttc tac ctg gtg aac ctg atc ctg gcc gtg gtc gca atg gcc tat        1248
Ser Phe Tyr Leu Val Asn Leu Ile Leu Ala Val Val Ala Met Ala Tyr
            405                     410                     415

gag gag caa aac caa gcc acc atc gct gag acc gag gag aag gaa aag        1296
Glu Glu Gln Asn Gln Ala Thr Ile Ala Glu Thr Glu Glu Lys Glu Lys
            420                     425                     430

cgc ttc cag gag gcc atg gaa atg ctc aag aaa gaa cac gag gcc ctc        1344
Arg Phe Gln Glu Ala Met Glu Met Leu Lys Lys Glu His Glu Ala Leu
            435                     440                     445

acc atc agg ggt gtg gat acc gtg tcc cgt agc tcc ttg gag atg tcc        1392
Thr Ile Arg Gly Val Asp Thr Val Ser Arg Ser Ser Leu Glu Met Ser
        450                     455                     460

cct ttg gcc cca gta aac agc cat gag aga aga agc aag agg aga aaa        1440
Pro Leu Ala Pro Val Asn Ser His Glu Arg Arg Ser Lys Arg Arg Lys
465                     470                     475                     480

cgg atg tct tca gga act gag gag tgt ggg gag gac agg ctc ccc aag        1488
Arg Met Ser Ser Gly Thr Glu Glu Cys Gly Glu Asp Arg Leu Pro Lys
            485                     490                     495

tct gac tca gaa gat ggt ccc aga gca atg aat cat ctc agc ctc acc        1536
Ser Asp Ser Glu Asp Gly Pro Arg Ala Met Asn His Leu Ser Leu Thr
            500                     505                     510

cgt ggc ctc agc agg act tct atg aag cca cgt tcc agc cgc ggg agc        1584
Arg Gly Leu Ser Arg Thr Ser Met Lys Pro Arg Ser Ser Arg Gly Ser
            515                     520                     525

att ttc acc ttt cgc agg cga gac ctg ggt tct gaa gca gat ttt gca        1632
Ile Phe Thr Phe Arg Arg Arg Asp Leu Gly Ser Glu Ala Asp Phe Ala
            530                     535                     540

gat gat gaa aac agc aca gcg ggg gag agc gag agc cac cac aca tca        1680
Asp Asp Glu Asn Ser Thr Ala Gly Glu Ser Glu Ser His His Thr Ser
545                     550                     555                     560

ctg ctg gtg ccc tgg ccc ctg cgc cgg acc agt gcc cag gga cag ccc        1728
Leu Leu Val Pro Trp Pro Leu Arg Arg Thr Ser Ala Gln Gly Gln Pro
            565                     570                     575

agt ccc gga acc tcg gct cct ggc cac gcc ctc cat ggc aaa aag aac        1776
Ser Pro Gly Thr Ser Ala Pro Gly His Ala Leu His Gly Lys Lys Asn
            580                     585                     590

agc act gtg gac tgc aat ggg gtg gtc tca tta ctg ggg gca ggc gac        1824
Ser Thr Val Asp Cys Asn Gly Val Val Ser Leu Leu Gly Ala Gly Asp
            595                     600                     605

cca gag gcc aca tcc cca gga agc cac ctc ctc cgc cct gtg atg cta        1872
Pro Glu Ala Thr Ser Pro Gly Ser His Leu Leu Arg Pro Val Met Leu
            610                     615                     620

gag cac ccg cca gac acg acc acg cca tcg gag gag cca ggc ggg ccc        1920
Glu His Pro Pro Asp Thr Thr Thr Pro Ser Glu Glu Pro Gly Gly Pro
625                     630                     635                     640

cag atg ctg acc tcc cag gct ccg tgt gta gat ggc ttc gag gag cca        1968
```

```
Gln Met Leu Thr Ser Gln Ala Pro Cys Val Asp Gly Phe Glu Glu Pro
            645             650             655

gga gca cgg cag cgg gcc ctc agc gca gtc agc gtc ctc acc agc gca      2016
Gly Ala Arg Gln Arg Ala Leu Ser Ala Val Ser Val Leu Thr Ser Ala
            660             665             670

ctg gaa gag tta gag gag tct cgc cac aag tgt cca cca tgc tgg aac      2064
Leu Glu Glu Leu Glu Glu Ser Arg His Lys Cys Pro Pro Cys Trp Asn
            675             680             685

cgt ctc gcc cag cgc tac ctg atc tgg gag tgc tgc ccg ctg tgg atg      2112
Arg Leu Ala Gln Arg Tyr Leu Ile Trp Glu Cys Cys Pro Leu Trp Met
            690             695             700

tcc atc aag cag gga gtg aag ttg gtg gtc atg gac ccg ttt act gac      2160
Ser Ile Lys Gln Gly Val Lys Leu Val Val Met Asp Pro Phe Thr Asp
705             710             715             720

ctc acc atc act atg tgc atc gta ctc aac aca ctc ttc atg gcg ctg      2208
Leu Thr Ile Thr Met Cys Ile Val Leu Asn Thr Leu Phe Met Ala Leu
            725             730             735

gag cac tac aac atg aca agt gaa ttc gag gag atg ctg cag gtc gga      2256
Glu His Tyr Asn Met Thr Ser Glu Phe Glu Glu Met Leu Gln Val Gly
            740             745             750

aac ctg gtc ttc aca ggg att ttc aca gca gag atg acc ttc aag atc      2304
Asn Leu Val Phe Thr Gly Ile Phe Thr Ala Glu Met Thr Phe Lys Ile
            755             760             765

att gcc ctc gac ccc tac tac tac ttc caa cag ggc tgg aac atc ttc      2352
Ile Ala Leu Asp Pro Tyr Tyr Tyr Phe Gln Gln Gly Trp Asn Ile Phe
770             775             780

gac agc atc atc gtc atc ctt agc ctc atg gag ctg ggc ctg tcc cgc      2400
Asp Ser Ile Ile Val Ile Leu Ser Leu Met Glu Leu Gly Leu Ser Arg
785             790             795             800

atg agc aac ttg tcg gtg ctg cgc tcc ttc cgc ctg ctg cgg gtc ttc      2448
Met Ser Asn Leu Ser Val Leu Arg Ser Phe Arg Leu Leu Arg Val Phe
            805             810             815

aag ctg gcc aaa tca tgg ccc acc ctg aac aca ctc atc aag atc atc      2496
Lys Leu Ala Lys Ser Trp Pro Thr Leu Asn Thr Leu Ile Lys Ile Ile
            820             825             830

ggg aac tca gtg ggg gca ctg ggg aac ctg aca ctg gtg cta gcc atc      2544
Gly Asn Ser Val Gly Ala Leu Gly Asn Leu Thr Leu Val Leu Ala Ile
            835             840             845

atc gtg ttc atc ttt gct gtg gtg ggc atg cag ctc ttt ggc aag aac      2592
Ile Val Phe Ile Phe Ala Val Val Gly Met Gln Leu Phe Gly Lys Asn
            850             855             860

tac tcg gag ctg agg gac agc gac tca ggc ctg ctg cct cgc tgg cac      2640
Tyr Ser Glu Leu Arg Asp Ser Asp Ser Gly Leu Leu Pro Arg Trp His
865             870             875             880

atg atg gac ttc ttt cat gcc ttc ctc atc atc ttc cgc atc ctc tgt      2688
Met Met Asp Phe Phe His Ala Phe Leu Ile Ile Phe Arg Ile Leu Cys
            885             890             895
```

```
gga gag tgg atc gag acc atg tgg gac tgc atg gag gtg tcg ggg cag       2736
Gly Glu Trp Ile Glu Thr Met Trp Asp Cys Met Glu Val Ser Gly Gln
            900                 905                 910

tca tta tgc ctg ctg gtc ttc ttg ctt gtt atg gtc att ggc aac ctt       2784
Ser Leu Cys Leu Leu Val Phe Leu Leu Val Met Val Ile Gly Asn Leu
            915                 920                 925

gtg gtc ctg aat ctc ttc ctg gcc ttg ctg ctc agc tcc ttc agt gca       2832
Val Val Leu Asn Leu Phe Leu Ala Leu Leu Leu Ser Ser Phe Ser Ala
        930                 935                 940

gac aac ctc aca gcc cct gat gag gac aga gag atg aac aac ctc cag       2880
Asp Asn Leu Thr Ala Pro Asp Glu Asp Arg Glu Met Asn Asn Leu Gln
945                 950                 955                 960

ctg gcc ctg gcc cgc atc cag agg ggc ctg cgc ttt gtc aag cgg acc       2928
Leu Ala Leu Ala Arg Ile Gln Arg Gly Leu Arg Phe Val Lys Arg Thr
                965                 970                 975

acc tgg gat ttc tgc tgt ggt ctc ctg cgg cag cgg cct cag aag ccc       2976
Thr Trp Asp Phe Cys Cys Gly Leu Leu Arg Gln Arg Pro Gln Lys Pro
                980                 985                 990

gca gcc ctt gcc gcc cag ggc cag  ctg ccc agc tgc att  gcc acc ccc      3024
Ala Ala Leu Ala Ala Gln Gly Gln  Leu Pro Ser Cys Ile  Ala Thr Pro
            995                 1000                1005

tac tcc  ccg cca ccc cca gag  acg gag aag gtg cct  ccc acc cgc          3069
Tyr Ser  Pro Pro Pro Pro Glu  Thr Glu Lys Val Pro  Pro Thr Arg
    1010                1015                1020

aag gaa  aca cgg ttt gag gaa  ggc gag caa cca ggc  cag ggc acc          3114
Lys Glu  Thr Arg Phe Glu Glu  Gly Glu Gln Pro Gly  Gln Gly Thr
    1025                1030                1035

ccc ggg  gat cca gag ccc gtg  tgt gtg ccc atc gct  gtg gcc gag          3159
Pro Gly  Asp Pro Glu Pro Val  Cys Val Pro Ile Ala  Val Ala Glu
    1040                1045                1050

tca gac  aca gat gac caa gaa  gaa gat gag gag aac  agc ctg ggc          3204
Ser Asp  Thr Asp Asp Gln Glu  Glu Asp Glu Glu Asn  Ser Leu Gly
    1055                1060                1065

acg gag  gag gag tcc agc aag  cag cag gaa tcc cag  cct gtg tcc          3249
Thr Glu  Glu Glu Ser Ser Lys  Gln Gln Glu Ser Gln  Pro Val Ser
    1070                1075                1080

ggt ggc  cca gag gcc cct ccg  gat tcc agg acc tgg  agc cag gtg          3294
Gly Gly  Pro Glu Ala Pro Pro  Asp Ser Arg Thr Trp  Ser Gln Val
    1085                1090                1095

tca gcg  act gcc tcc tct gag  gcc gag gcc agt gca  tct cag gcc          3339
Ser Ala  Thr Ala Ser Ser Glu  Ala Glu Ala Ser Ala  Ser Gln Ala
    1100                1105                1110

gac tgg  cgg cag cag tgg aaa  gcg gaa ccc cag gcc  cca ggg tgc          3384
Asp Trp  Arg Gln Gln Trp Lys  Ala Glu Pro Gln Ala  Pro Gly Cys
    1115                1120                1125

ggt gag  acc cca gag gac agt  tgc tcc gag ggc agc  aca gca gac          3429
Gly Glu  Thr Pro Glu Asp Ser  Cys Ser Glu Gly Ser  Thr Ala Asp
    1130                1135                1140
```

```
atg acc aac acc gct gag ctc    ctg gag cag atc cct    gac ctc ggc         3474
Met Thr Asn Thr Ala Glu Leu    Leu Glu Gln Ile Pro    Asp Leu Gly
    1145                1150                1155

cag gat gtc aag gac cca gag    gac tgc ttc act gaa    ggc tgt gtc         3519
Gln Asp Val Lys Asp Pro Glu    Asp Cys Phe Thr Glu    Gly Cys Val
    1160                1165                1170

cgg cgc tgt ccc tgc tgt gcg    gtg gac acc aca cag    gcc cca ggg         3564
Arg Arg Cys Pro Cys Cys Ala    Val Asp Thr Thr Gln    Ala Pro Gly
    1175                1180                1185

aag gtc tgg tgg cgg ttg cgc    aag acc tgc tac cac    atc gtg gag         3609
Lys Val Trp Trp Arg Leu Arg    Lys Thr Cys Tyr His    Ile Val Glu
    1190                1195                1200

cac agc tgg ttc gag aca ttc    atc atc ttc atg atc    cta ctc agc         3654
His Ser Trp Phe Glu Thr Phe    Ile Ile Phe Met Ile    Leu Leu Ser
    1205                1210                1215

agt gga gcg ctg gcc ttc gag    gac atc tac cta gag    gag cgg aag         3699
Ser Gly Ala Leu Ala Phe Glu    Asp Ile Tyr Leu Glu    Glu Arg Lys
    1220                1225                1230

acc atc aag gtt ctg ctt gag    tat gcc gac aag atg    ttc aca tat         3744
Thr Ile Lys Val Leu Leu Glu    Tyr Ala Asp Lys Met    Phe Thr Tyr
    1235                1240                1245

gtc ttc gtg ctg gag atg ctg    ctc aag tgg gtg gcc    tac ggc ttc         3789
Val Phe Val Leu Glu Met Leu    Leu Lys Trp Val Ala    Tyr Gly Phe
    1250                1255                1260

aag aag tac ttc acc aat gcc    tgg tgc tgg ctc gac    ttc ctc atc         3834
Lys Lys Tyr Phe Thr Asn Ala    Trp Cys Trp Leu Asp    Phe Leu Ile
    1265                1270                1275

gta gac gtc tct ctg gtc agc    ctg gtg gcc aac acc    ctg ggc ttt         3879
Val Asp Val Ser Leu Val Ser    Leu Val Ala Asn Thr    Leu Gly Phe
    1280                1285                1290

gcc gag atg ggt ccc atc aag    tca ctg cgg acg ctg    cgt gca ctc         3924
Ala Glu Met Gly Pro Ile Lys    Ser Leu Arg Thr Leu    Arg Ala Leu
    1295                1300                1305

cgt cct ctg aga gct ctg tca    cga ttt gag ggc atg    agg gtg gtg         3969
Arg Pro Leu Arg Ala Leu Ser    Arg Phe Glu Gly Met    Arg Val Val
    1310                1315                1320

gtc aat gcc ctg gtg ggc gcc    atc ccg tcc atc atg    aac gtc ctc         4014
Val Asn Ala Leu Val Gly Ala    Ile Pro Ser Ile Met    Asn Val Leu
    1325                1330                1335

ctc gtc tgc ctc atc ttc tgg    ctc atc ttc agc atc    atg ggc gtg         4059
Leu Val Cys Leu Ile Phe Trp    Leu Ile Phe Ser Ile    Met Gly Val
    1340                1345                1350

aac ctc ttt gcg ggg aag ttt    ggg agg tgc atc aac    cag aca gag         4104
Asn Leu Phe Ala Gly Lys Phe    Gly Arg Cys Ile Asn    Gln Thr Glu
    1355                1360                1365

gga gac ttg cct ttg aac tac    acc atc gtg aac aac    aag agc cag         4149
Gly Asp Leu Pro Leu Asn Tyr    Thr Ile Val Asn Asn    Lys Ser Gln
```

```
tgt gag  tcc ttg aac ttg acc  gga gaa ttg tac tgg  acc aag gtg        4194
Cys Glu  Ser Leu Asn Leu Thr  Gly Glu Leu Tyr Trp  Thr Lys Val
    1385                 1390                 1395

aaa gtc  aac ttt gac aac gtg  ggg gcc ggg tac ctg  gcc ctt ctg        4239
Lys Val  Asn Phe Asp Asn Val  Gly Ala Gly Tyr Leu  Ala Leu Leu
    1400                 1405                 1410

cag gtg  gca aca ttt aaa ggc  tgg atg gac att atg  tat gca gct        4284
Gln Val  Ala Thr Phe Lys Gly  Trp Met Asp Ile Met  Tyr Ala Ala
    1415                 1420                 1425

gtg gac  tcc agg ggg tat gaa  gag cag cct cag tgg  gaa tac aac        4329
Val Asp  Ser Arg Gly Tyr Glu  Glu Gln Pro Gln Trp  Glu Tyr Asn
    1430                 1435                 1440

ctc tac  atg tac atc tat ttt  gtc att ttc atc atc  ttt ggg tct        4374
Leu Tyr  Met Tyr Ile Tyr Phe  Val Ile Phe Ile Ile  Phe Gly Ser
    1445                 1450                 1455

ttc ttc  acc ctg aac ctc ttt  att ggt gtc atc att  gac aac ttc        4419
Phe Phe  Thr Leu Asn Leu Phe  Ile Gly Val Ile Ile  Asp Asn Phe
    1460                 1465                 1470

aac caa  cag aag aaa aag tta  ggg ggc cag gac atc  ttc atg aca        4464
Asn Gln  Gln Lys Lys Lys Leu  Gly Gly Gln Asp Ile  Phe Met Thr
    1475                 1480                 1485

gag gag  cag aag aag tac tac  aat gcc atg aag aag  ctg ggc tcc        4509
Glu Glu  Gln Lys Lys Tyr Tyr  Asn Ala Met Lys Lys  Leu Gly Ser
    1490                 1495                 1500

aag aag  ccc cag aag ccc atc  cca cgg ccc ctg aac  aag tac cag        4554
Lys Lys  Pro Gln Lys Pro Ile  Pro Arg Pro Leu Asn  Lys Tyr Gln
    1505                 1510                 1515

ggc ttc  ata ttc gac att gtg  acc aag cag gcc ttt  gac gtc acc        4599
Gly Phe  Ile Phe Asp Ile Val  Thr Lys Gln Ala Phe  Asp Val Thr
    1520                 1525                 1530

atc atg  ttt ctg atc tgc ttg  aat atg gtg acc atg  atg gtg gag        4644
Ile Met  Phe Leu Ile Cys Leu  Asn Met Val Thr Met  Met Val Glu
    1535                 1540                 1545

aca gat  gac caa agt cct gag  aaa atc aac atc ttg  gcc aag atc        4689
Thr Asp  Asp Gln Ser Pro Glu  Lys Ile Asn Ile Leu  Ala Lys Ile
    1550                 1555                 1560

aac ctg  ctc ttt gtg gcc atc  ttc aca ggc gag tgt  att gtc aag        4734
Asn Leu  Leu Phe Val Ala Ile  Phe Thr Gly Glu Cys  Ile Val Lys
    1565                 1570                 1575

ctg gct  gcc ctg cgc cac tac  tac ttc acc aac agc  tgg aat atc        4779
Leu Ala  Ala Leu Arg His Tyr  Tyr Phe Thr Asn Ser  Trp Asn Ile
    1580                 1585                 1590

ttc gac  ttc gtg gtt gtc atc  ctc tcc atc gtg ggc  act gtg ctc        4824
Phe Asp  Phe Val Val Val Ile  Leu Ser Ile Val Gly  Thr Val Leu
    1595                 1600                 1605

tcg gac  atc atc cag aag tac  ttc ttc tcc ccg acg  ctc ttc cga        4869
```

```
Ser Asp  Ile Ile Gln Lys Tyr  Phe Phe Ser Pro Thr  Leu Phe Arg
    1610             1615              1620

gtc atc  cgc ctg gcc cga ata  ggc cgc atc ctc aga  ctg atc cga        4914
Val Ile  Arg Leu Ala Arg Ile  Gly Arg Ile Leu Arg  Leu Ile Arg
    1625             1630              1635

ggg gcc  aag ggg atc cgc acg  ctg ctc ttt gcc ctc  atg atg tcc        4959
Gly Ala  Lys Gly Ile Arg Thr  Leu Leu Phe Ala Leu  Met Met Ser
    1640             1645              1650

ctg cct  gcc ctc ttc aac atc  ggg ctg ctg ctc ttc  ctc gtc atg        5004
Leu Pro  Ala Leu Phe Asn Ile  Gly Leu Leu Leu Phe  Leu Val Met
    1655             1660              1665

ttc atc  tac tcc atc ttt ggc  atg gcc aac ttc gct  tat gtc aag        5049
Phe Ile  Tyr Ser Ile Phe Gly  Met Ala Asn Phe Ala  Tyr Val Lys
    1670             1675              1680

tgg gag  gct ggc atc gac gac  atg ttc aac ttc cag  acc ttc gcc        5094
Trp Glu  Ala Gly Ile Asp Asp  Met Phe Asn Phe Gln  Thr Phe Ala
    1685             1690              1695

aac agc  atg ctg tgc ctc ttc  cag atc acc acg tcg  gcc ggc tgg        5139
Asn Ser  Met Leu Cys Leu Phe  Gln Ile Thr Thr Ser  Ala Gly Trp
    1700             1705              1710

gat ggc  ctc ctc agc ccc atc  ctc aac act ggg ccg  ccc tac tgc        5184
Asp Gly  Leu Leu Ser Pro Ile  Leu Asn Thr Gly Pro  Pro Tyr Cys
    1715             1720              1725

gac ccc  act ctg ccc aac agc  aat ggc tct cgg ggg  gac tgc ggg        5229
Asp Pro  Thr Leu Pro Asn Ser  Asn Gly Ser Arg Gly  Asp Cys Gly
    1730             1735              1740

agc cca  gcc gtg ggc atc ctc  ttc ttc acc acc tac  atc atc atc        5274
Ser Pro  Ala Val Gly Ile Leu  Phe Phe Thr Thr Tyr  Ile Ile Ile
    1745             1750              1755

tcc ttc  ctc atc gtg gtc aac  atg tac att gcc atc  atc ctg gag        5319
Ser Phe  Leu Ile Val Val Asn  Met Tyr Ile Ala Ile  Ile Leu Glu
    1760             1765              1770

aac ttc  agc gtg gcc acg gag  gag agc acc gag ccc  ctg agt gag        5364
Asn Phe  Ser Val Ala Thr Glu  Glu Ser Thr Glu Pro  Leu Ser Glu
    1775             1780              1785

gac gac  ttc gat atg ttc tat  gag atc tgg gag aaa  ttt gac cca        5409
Asp Asp  Phe Asp Met Phe Tyr  Glu Ile Trp Glu Lys  Phe Asp Pro
    1790             1795              1800

gag gcc  act cag ttt att gag  tat tcg gtc ctg tct  gac ttt gcc        5454
Glu Ala  Thr Gln Phe Ile Glu  Tyr Ser Val Leu Ser  Asp Phe Ala
    1805             1810              1815

gat gcc  ctg tct gag cca ctc  cgt atc gcc aag ccc  aac cag ata        5499
Asp Ala  Leu Ser Glu Pro Leu  Arg Ile Ala Lys Pro  Asn Gln Ile
    1820             1825              1830

agc ctc  atc aac atg gac ctg  ccc atg gtg agt ggg  gac cgc atc        5544
Ser Leu  Ile Asn Met Asp Leu  Pro Met Val Ser Gly  Asp Arg Ile
    1835             1840              1845
```

```
cat tgc  atg gac att ctc ttt  gcc ttc acc aaa agg  gtc ctg ggg       5589
His Cys  Met Asp Ile Leu Phe  Ala Phe Thr Lys Arg  Val Leu Gly
    1850             1855               1860

gag tct  ggg gag atg gac gcc  ctg aag atc cag atg  gag gag aag       5634
Glu Ser  Gly Glu Met Asp Ala  Leu Lys Ile Gln Met  Glu Glu Lys
    1865             1870               1875

ttc atg  gca gcc aac cca tcc  aag atc tcc tac gag  ccc atc acc       5679
Phe Met  Ala Ala Asn Pro Ser  Lys Ile Ser Tyr Glu  Pro Ile Thr
    1880             1885               1890

acc aca  ctc cgg cgc aag cac  gaa gag gtg tcg gcc  atg gtt atc       5724
Thr Thr  Leu Arg Arg Lys His  Glu Glu Val Ser Ala  Met Val Ile
    1895             1900               1905

cag aga  gcc ttc cgc agg cac  ctg ctg caa cgc tct  ttg aag cat       5769
Gln Arg  Ala Phe Arg Arg His  Leu Leu Gln Arg Ser  Leu Lys His
    1910             1915               1920

gcc tcc  ttc ctc ttc cgt cag  cag gcg ggc agc ggc  ctc tcc gaa       5814
Ala Ser  Phe Leu Phe Arg Gln  Gln Ala Gly Ser Gly  Leu Ser Glu
    1925             1930               1935

gag gat  gcc cct gag cga gag  ggc ctc atc gcc tac  gtg atg agt       5859
Glu Asp  Ala Pro Glu Arg Glu  Gly Leu Ile Ala Tyr  Val Met Ser
    1940             1945               1950

gag aac  ttc tcc cga ccc ctt  ggc cca ccc tcc agc  tcc tcc atc       5904
Glu Asn  Phe Ser Arg Pro Leu  Gly Pro Pro Ser Ser  Ser Ser Ile
    1955             1960               1965

tcc tcc  act tcc ttc cca ccc  tcc tat gac agt gtc  act aga gcc       5949
Ser Ser  Thr Ser Phe Pro Pro  Ser Tyr Asp Ser Val  Thr Arg Ala
    1970             1975               1980

acc agc  gat aac ctc cag gtg  cgg ggg tct gac tac  agc cac agt       5994
Thr Ser  Asp Asn Leu Gln Val  Arg Gly Ser Asp Tyr  Ser His Ser
    1985             1990               1995

gaa gat  ctc gcc gac ttc ccc  cct tct ccg gac agg  gac cgt gag       6039
Glu Asp  Leu Ala Asp Phe Pro  Pro Ser Pro Asp Arg  Asp Arg Glu
    2000             2005               2010

tcc atc  gtg tgagcctcgg cctggctggc caggacacac tgaaaagcag            6088
Ser Ile  Val
    2015

ccttttttcac catggcaaac ctaaatgcag tcagtcamaa accagcctgg ggccttcctg   6148

gctttgggag taagaaatgg gcct                                          6172


<210>  2
<211>  2016
<212>  PRT
<213>  Homo sapiens

<400>  2

Met Ala Asn Phe Leu Leu Pro Arg Gly Thr Ser Ser Phe Arg Arg Phe
1               5                   10                  15
```

```
Thr Arg Glu Ser Leu Ala Ala Ile Glu Lys Arg Met Ala Glu Lys Gln
        20              25              30            .


Ala Arg Gly Ser Thr Thr Leu Gln Glu Ser Arg Glu Gly Leu Pro Glu
        35              40              45


Glu Glu Ala Pro Arg Pro Gln Leu Asp Leu Gln Ala Ser Lys Lys Leu
    50              55              60


Pro Asp Leu Tyr Gly Asn Pro Pro Gln Glu Leu Ile Gly Glu Pro Leu
65              70              75              80


Glu Asp Leu Asp Pro Phe Tyr Ser Thr Gln Lys Thr Phe Ile Val Leu
                85              90              95


Asn Lys Gly Lys Thr Ile Phe Arg Phe Ser Ala Thr Asn Ala Leu Tyr
                100             105             110


Val Leu Ser Pro Phe His Pro Ile Arg Arg Ala Ala Val Lys Ile Leu
        115             120             125


Val His Ser Leu Phe Asn Met Leu Ile Met Cys Thr Ile Leu Thr Asn
    130             135             140


Cys Val Phe Met Ala Gln His Asp Pro Pro Pro Trp Thr Lys Tyr Val
145             150             155             160


Glu Tyr Thr Phe Thr Ala Ile Tyr Thr Phe Glu Ser Leu Val Lys Ile
    .           165             170             175


Leu Ala Arg Gly Phe Cys Leu His Ala Phe Thr Phe Leu Arg Asp Pro
        180             185             190


Trp Asn Trp Leu Asp Phe Ser Val Ile Ile Met Ala Tyr Thr Thr Glu
        195             200             205


Phe Val Asp Leu Gly Asn Val Ser Ala Leu Arg Thr Phe Arg Val Leu
    210             215             220


Arg Ala Leu Lys Thr Ile Ser Val Ile Ser Gly Leu Lys Thr Ile Val
225             230             235             240


Gly Ala Leu Ile Gln Ser Val Lys Lys Leu Ala Asp Val Met Val Leu
                245             250             255


Thr Val Phe Cys Leu Ser Val Phe Ala Leu Ile Gly Leu Gln Leu Phe
        260             265             270
                                                            .
```

```
Met Gly Asn Leu Arg His Lys Cys Val Arg Asn Phe Thr Ala Leu Asn
        275                 280                 285

Gly Thr Asn Gly Ser Val Glu Ala Asp Gly Leu Val Trp Glu Ser Leu
        290                 295                 300

Asp Leu Tyr Leu Ser Asp Pro Glu Asn Tyr Leu Leu Lys Asn Gly Thr
305                 310                 315                 320

Ser Asp Val Leu Leu Cys Gly Asn Ser Ser Asp Ala Gly Thr Cys Pro
                325                 330                 335

Glu Gly Tyr Arg Cys Leu Lys Ala Gly Glu Asn Pro Asp His Gly Tyr
                340                 345                 350

Thr Ser Phe Asp Ser Phe Ala Trp Ala Phe Leu Ala Leu Phe Arg Leu
        355                 360                 365

Met Thr Gln Asp Cys Trp Glu Arg Leu Tyr Gln Gln Thr Leu Arg Ser
        370                 375                 380

Ala Gly Lys Ile Tyr Met Ile Phe Phe Met Leu Val Ile Phe Leu Gly
385                 390                 395                 400

Ser Phe Tyr Leu Val Asn Leu Ile Leu Ala Val Val Ala Met Ala Tyr
                405                 410                 415

Glu Glu Gln Asn Gln Ala Thr Ile Ala Glu Thr Glu Glu Lys Glu Lys
                420                 425                 430

Arg Phe Gln Glu Ala Met Glu Met Leu Lys Lys Glu His Glu Ala Leu
        435                 440                 445

Thr Ile Arg Gly Val Asp Thr Val Ser Arg Ser Ser Leu Glu Met Ser
        450                 455                 460

Pro Leu Ala Pro Val Asn Ser His Glu Arg Arg Ser Lys Arg Arg Lys
465                 470                 475                 480

Arg Met Ser Ser Gly Thr Glu Glu Cys Gly Glu Asp Arg Leu Pro Lys
                485                 490                 495

Ser Asp Ser Glu Asp Gly Pro Arg Ala Met Asn His Leu Ser Leu Thr
                500                 505                 510

Arg Gly Leu Ser Arg Thr Ser Met Lys Pro Arg Ser Ser Arg Gly Ser
```

Ile Phe Thr Phe Arg Arg Arg Asp Leu Gly Ser Glu Ala Asp Phe Ala
    530   535   540

Asp Asp Glu Asn Ser Thr Ala Gly Glu Ser Glu Ser His His Thr Ser
545   550   555   560

Leu Leu Val Pro Trp Pro Leu Arg Arg Thr Ser Ala Gln Gly Gln Pro
                565   570   575

Ser Pro Gly Thr Ser Ala Pro Gly His Ala Leu His Gly Lys Lys Asn
                580   585   590

Ser Thr Val Asp Cys Asn Gly Val Val Ser Leu Leu Gly Ala Gly Asp
                595   600   605

Pro Glu Ala Thr Ser Pro Gly Ser His Leu Leu Arg Pro Val Met Leu
    610   615   620

Glu His Pro Pro Asp Thr Thr Thr Pro Ser Glu Glu Pro Gly Gly Pro
625   630   635   640

Gln Met Leu Thr Ser Gln Ala Pro Cys Val Asp Gly Phe Glu Glu Pro
                645   650   655

Gly Ala Arg Gln Arg Ala Leu Ser Ala Val Ser Val Leu Thr Ser Ala
                660   665   670

Leu Glu Glu Leu Glu Glu Ser Arg His Lys Cys Pro Pro Cys Trp Asn
                675   680   685

Arg Leu Ala Gln Arg Tyr Leu Ile Trp Glu Cys Cys Pro Leu Trp Met
    690   695   700

Ser Ile Lys Gln Gly Val Lys Leu Val Val Met Asp Pro Phe Thr Asp
705   710   715   720

Leu Thr Ile Thr Met Cys Ile Val Leu Asn Thr Leu Phe Met Ala Leu
                725   730   735

Glu His Tyr Asn Met Thr Ser Glu Phe Glu Glu Met Leu Gln Val Gly
                740   745   750

Asn Leu Val Phe Thr Gly Ile Phe Thr Ala Glu Met Thr Phe Lys Ile
                755   760   765

```
Ile Ala Leu Asp Pro Tyr Tyr Tyr Phe Gln Gln Gly Trp Asn Ile Phe
    770             775             780

Asp Ser Ile Ile Val Ile Leu Ser Leu Met Glu Leu Gly Leu Ser Arg
785             790             795             800

Met Ser Asn Leu Ser Val Leu Arg Ser Phe Arg Leu Leu Arg Val Phe
            805             810             815

Lys Leu Ala Lys Ser Trp Pro Thr Leu Asn Thr Leu Ile Lys Ile Ile
            820             825             830

Gly Asn Ser Val Gly Ala Leu Gly Asn Leu Thr Leu Val Leu Ala Ile
            835             840             845

Ile Val Phe Ile Phe Ala Val Val Gly Met Gln Leu Phe Gly Lys Asn
    850             855             860

Tyr Ser Glu Leu Arg Asp Ser Asp Ser Gly Leu Leu Pro Arg Trp His
865             870             875             880

Met Met Asp Phe Phe His Ala Phe Leu Ile Ile Phe Arg Ile Leu Cys
            885             890             895

Gly Glu Trp Ile Glu Thr Met Trp Asp Cys Met Glu Val Ser Gly Gln
            900             905             910

Ser Leu Cys Leu Leu Val Phe Leu Leu Val Met Val Ile Gly Asn Leu
            915             920             925

Val Val Leu Asn Leu Phe Leu Ala Leu Leu Leu Ser Ser Phe Ser Ala
    930             935             940

Asp Asn Leu Thr Ala Pro Asp Glu Asp Arg Glu Met Asn Asn Leu Gln
945             950             955             960

Leu Ala Leu Ala Arg Ile Gln Arg Gly Leu Arg Phe Val Lys Arg Thr
            965             970             975

Thr Trp Asp Phe Cys Cys Gly Leu Leu Arg Gln Arg Pro Gln Lys Pro
            980             985             990

Ala Ala Leu Ala Ala Gln Gly Gln  Leu Pro Ser Cys Ile  Ala Thr Pro
            995             1000            1005

Tyr Ser  Pro Pro Pro Pro Glu  Thr Glu Lys Val Pro  Pro Thr Arg
    1010            1015            1020
```

```
Lys Glu  Thr Arg Phe Glu Glu  Gly Glu Gln Pro Gly  Gln Gly Thr
    1025             1030             1035

Pro Gly  Asp Pro Glu Pro Val  Cys Val Pro Ile Ala  Val Ala Glu
    1040             1045             1050

Ser Asp  Thr Asp Asp Gln Glu  Glu Asp Glu Glu Asn  Ser Leu Gly
    1055             1060             1065

Thr Glu  Glu Glu Ser Ser Lys  Gln Gln Glu Ser Gln  Pro Val Ser
    1070             1075             1080

Gly Gly  Pro Glu Ala Pro Pro  Asp Ser Arg Thr Trp  Ser Gln Val
    1085             1090             1095

Ser Ala  Thr Ala Ser Ser Glu  Ala Glu Ala Ser Ala  Ser Gln Ala
    1100             1105             1110

Asp Trp  Arg Gln Gln Trp Lys  Ala Glu Pro Gln Ala  Pro Gly Cys
    1115             1120             1125

Gly Glu  Thr Pro Glu Asp Ser  Cys Ser Glu Gly Ser  Thr Ala Asp
    1130             1135             1140

Met Thr  Asn Thr Ala Glu Leu  Leu Glu Gln Ile Pro  Asp Leu Gly
    1145             1150             1155

Gln Asp  Val Lys Asp Pro Glu  Asp Cys Phe Thr Glu  Gly Cys Val
    1160             1165             1170

Arg Arg  Cys Pro Cys Cys Ala  Val Asp Thr Thr Gln  Ala Pro Gly
    1175             1180             1185

Lys Val  Trp Trp Arg Leu Arg  Lys Thr Cys Tyr His  Ile Val Glu
    1190             1195             1200

His Ser  Trp Phe Glu Thr Phe  Ile Ile Phe Met Ile  Leu Leu Ser
    1205             1210             1215

Ser Gly  Ala Leu Ala Phe Glu  Asp Ile Tyr Leu Glu  Glu Arg Lys
    1220             1225             1230

Thr Ile  Lys Val Leu Leu Glu  Tyr Ala Asp Lys Met  Phe Thr Tyr
    1235             1240             1245

Val Phe  Val Leu Glu Met Leu  Leu Lys Trp Val Ala  Tyr Gly Phe
    1250             1255             1260
```

Lys Lys Tyr Phe Thr Asn Ala Trp Cys Trp Leu Asp Phe Leu Ile
    1265   1270   1275

Val Asp Val Ser Leu Val Ser Leu Val Ala Asn Thr Leu Gly Phe
    1280   1285   1290

Ala Glu Met Gly Pro Ile Lys Ser Leu Arg Thr Leu Arg Ala Leu
    1295   1300   1305

Arg Pro Leu Arg Ala Leu Ser Arg Phe Glu Gly Met Arg Val Val
    1310   1315   1320

Val Asn Ala Leu Val Gly Ala Ile Pro Ser Ile Met Asn Val Leu
    1325   1330   1335

Leu Val Cys Leu Ile Phe Trp Leu Ile Phe Ser Ile Met Gly Val
    1340   1345   1350

Asn Leu Phe Ala Gly Lys Phe Gly Arg Cys Ile Asn Gln Thr Glu
    1355   1360   1365

Gly Asp Leu Pro Leu Asn Tyr Thr Ile Val Asn Asn Lys Ser Gln
    1370   1375   1380

Cys Glu Ser Leu Asn Leu Thr Gly Glu Leu Tyr Trp Thr Lys Val
    1385   1390   1395

Lys Val Asn Phe Asp Asn Val Gly Ala Gly Tyr Leu Ala Leu Leu
    1400   1405   1410

Gln Val Ala Thr Phe Lys Gly Trp Met Asp Ile Met Tyr Ala Ala
    1415   1420   1425

Val Asp Ser Arg Gly Tyr Glu Glu Gln Pro Gln Trp Glu Tyr Asn
    1430   1435   1440

Leu Tyr Met Tyr Ile Tyr Phe Val Ile Phe Ile Ile Phe Gly Ser
    1445   1450   °   1455

Phe Phe Thr Leu Asn Leu Phe Ile Gly Val Ile Ile Asp Asn Phe
    1460   1465   1470

Asn Gln Gln Lys Lys Lys Leu Gly Gly Gln Asp Ile Phe Met Thr
    1475   1480   1485

Glu Glu Gln Lys Lys Tyr Tyr Asn Ala Met Lys Lys Leu Gly Ser

```
              1490                    1495                    1500


    Lys Lys  Pro Gln Lys Pro Ile  Pro Arg Pro Leu Asn  Lys Tyr Gln
        1505             1510              1515


    Gly Phe  Ile Phe Asp Ile Val  Thr Lys Gln Ala Phe  Asp Val Thr
        1520             1525              1530


    Ile Met  Phe Leu Ile Cys Leu  Asn Met Val Thr Met  Met Val Glu
        1535             1540              1545


    Thr Asp  Asp Gln Ser Pro Glu  Lys Ile Asn Ile Leu  Ala Lys Ile
        1550             1555              1560


    Asn Leu  Leu Phe Val Ala Ile  Phe Thr Gly Glu Cys  Ile Val Lys
        1565             1570              1575


    Leu Ala  Ala Leu Arg His Tyr  Tyr Phe Thr Asn Ser  Trp Asn Ile
        1580             1585              1590


    Phe Asp  Phe Val Val Val Ile  Leu Ser Ile Val Gly  Thr Val Leu
        1595             1600              1605


    Ser Asp  Ile Ile Gln Lys Tyr  Phe Phe Ser Pro Thr  Leu Phe Arg
        1610             1615              1620


    Val Ile  Arg Leu Ala Arg Ile  Gly Arg Ile Leu Arg  Leu Ile Arg
        1625             1630              1635


    Gly Ala  Lys Gly Ile Arg Thr  Leu Leu Phe Ala Leu  Met Met Ser
        1640             1645              1650


    Leu Pro  Ala Leu Phe Asn Ile  Gly Leu Leu Leu Phe  Leu Val Met
        1655             1660              1665


    Phe Ile  Tyr Ser Ile Phe Gly  Met Ala Asn Phe Ala  Tyr Val Lys
        1670             1675              1680


    Trp Glu  Ala Gly Ile Asp Asp  Met Phe Asn Phe Gln  Thr Phe Ala
        1685             1690              1695


    Asn Ser  Met Leu Cys Leu Phe  Gln Ile Thr Thr Ser  Ala Gly Trp
        1700             1705              1710


    Asp Gly  Leu Leu Ser Pro Ile  Leu Asn Thr Gly Pro  Pro Tyr Cys
        1715             1720              1725
```

```
Asp Pro   Thr Leu Pro Asn Ser   Asn Gly Ser Arg Gly   Asp Cys Gly
    1730              1735                 1740

Ser Pro   Ala Val Gly Ile Leu   Phe Phe Thr Thr Tyr   Ile Ile Ile
    1745              1750                 1755

Ser Phe   Leu Ile Val Val Asn   Met Tyr Ile Ala Ile   Ile Leu Glu
    1760              1765                 1770

Asn Phe   Ser Val Ala Thr Glu   Glu Ser Thr Glu Pro   Leu Ser Glu
    1775              1780                 1785

Asp Asp   Phe Asp Met Phe Tyr   Glu Ile Trp Glu Lys   Phe Asp Pro
    1790              1795                 1800

Glu Ala   Thr Gln Phe Ile Glu   Tyr Ser Val Leu Ser   Asp Phe Ala
    1805              1810                 1815

Asp Ala   Leu Ser Glu Pro Leu   Arg Ile Ala Lys Pro   Asn Gln Ile
    1820              1825                 1830

Ser Leu   Ile Asn Met Asp Leu   Pro Met Val Ser Gly   Asp Arg Ile
    1835              1840                 1845

His Cys   Met Asp Ile Leu Phe   Ala Phe Thr Lys Arg   Val Leu Gly
    1850              1855                 1860

Glu Ser   Gly Glu Met Asp Ala   Leu Lys Ile Gln Met   Glu Glu Lys
    1865              1870                 1875

Phe Met   Ala Ala Asn Pro Ser   Lys Ile Ser Tyr Glu   Pro Ile Thr
    1880              1885                 1890

Thr Thr   Leu Arg Arg Lys His   Glu Glu Val Ser Ala   Met Val Ile
    1895              1900                 1905

Gln Arg   Ala Phe Arg Arg His   Leu Leu Gln Arg Ser   Leu Lys His
    1910              1915                 1920

Ala Ser   Phe Leu Phe Arg Gln   Gln Ala Gly Ser Gly   Leu Ser Glu
    1925              1930                 1935

Glu Asp   Ala Pro Glu Arg Glu   Gly Leu Ile Ala Tyr   Val Met Ser
    1940              1945                 1950

Glu Asn   Phe Ser Arg Pro Leu   Gly Pro Pro Ser Ser   Ser Ser Ile
    1955              1960                 1965
```

Ser Ser   Thr Ser Phe Pro Pro   Ser Tyr Asp Ser Val   Thr Arg Ala
    1970   1975   1980

Thr Ser   Asp Asn Leu Gln Val   Arg Gly Ser Asp Tyr   Ser His Ser
    1985   1990   1995

Glu Asp   Leu Ala Asp Phe Pro   Pro Ser Pro Asp Arg   Asp Arg Glu
    2000   2005   2010

Ser Ile   Val
    2015

<210>   3
<211>   6172
<212>   DNA
<213>   Homo sapiens

<220>
<221>   CDS
<222>   (1)..(6048)

<400>   3
atg gca aac ttc cta tta cct agg ggc acc agc agc ttc cgc agg ttc   48
Met Ala Asn Phe Leu Leu Pro Arg Gly Thr Ser Ser Phe Arg Arg Phe
1   5   10   15

aca cgg gag tcc ctg gca gcc atc gag aag cgc atg gcg gag aag caa   96
Thr Arg Glu Ser Leu Ala Ala Ile Glu Lys Arg Met Ala Glu Lys Gln
                20   25   30

gcc cgc ggc tca acc acc ttg cag gag agc cga gag ggg ctg ccc gag   144
Ala Arg Gly Ser Thr Thr Leu Gln Glu Ser Arg Glu Gly Leu Pro Glu
            35   40   45

gag gag gct ccc cgg ccc cag ctg gac ctg cag gcc tcc aaa aag ctg   192
Glu Glu Ala Pro Arg Pro Gln Leu Asp Leu Gln Ala Ser Lys Lys Leu
        50   55   60

cca gat ctc tat ggc aat cca ccc caa gag ctc atc gga gag ccc ctg   240
Pro Asp Leu Tyr Gly Asn Pro Pro Gln Glu Leu Ile Gly Glu Pro Leu
65   70   75   80

gag gac ctg gac ccc ttc tat agc acc caa aag act ttc atc gta ctg   288
Glu Asp Leu Asp Pro Phe Tyr Ser Thr Gln Lys Thr Phe Ile Val Leu
                85   90   95

aat aaa ggc aag acc atc ttc cgg ttc agt gcc acc aac gcc ttg tat   336
Asn Lys Gly Lys Thr Ile Phe Arg Phe Ser Ala Thr Asn Ala Leu Tyr
                100   105   110

gtc ctc agt ccc ttc cac ccc atc cgg aga gcg gct gtg aag att ctg   384
Val Leu Ser Pro Phe His Pro Ile Arg Arg Ala Ala Val Lys Ile Leu
            115   120   125

gtt cac tcg ctc ttc aac atg ctc atc atg tgc acc atc ctc acc aac   432
Val His Ser Leu Phe Asn Met Leu Ile Met Cys Thr Ile Leu Thr Asn
    130   135   140

```
tgc gtg ttc atg gcc cag cac gac cct cca ccc tgg acc aag tat gtc          480
Cys Val Phe Met Ala Gln His Asp Pro Pro Pro Trp Thr Lys Tyr Val
145             150             155                     160

gag tac acc ttc acc gcc att tac acc ttt gag tct ctg gtc aag att          528
Glu Tyr Thr Phe Thr Ala Ile Tyr Thr Phe Glu Ser Leu Val Lys Ile
                165             170                     175

ctg gct cga ggc ttc tgc ctg cac gcg ttc act ttc ctt cgg gac cca          576
Leu Ala Arg Gly Phe Cys Leu His Ala Phe Thr Phe Leu Arg Asp Pro
                180             185                     190

tgg aac tgg ctg gac ttt agt gtg att atc atg gca tac aca act gaa          624
Trp Asn Trp Leu Asp Phe Ser Val Ile Ile Met Ala Tyr Thr Thr Glu
                195             200             205

ttt gtg gac ctg ggc aat gtc tca gcc tta cgc acc ttc cga gtc ctc          672
Phe Val Asp Leu Gly Asn Val Ser Ala Leu Arg Thr Phe Arg Val Leu
                210             215             220

cgg gcc ctg aaa act ata tca gtc att tca ggg ctg aag acc atc gtg          720
Arg Ala Leu Lys Thr Ile Ser Val Ile Ser Gly Leu Lys Thr Ile Val
225             230             235             240

ggg gcc ctg atc cag tct gtg aag aag ctg gct gat gtg atg gtc ctc          768
Gly Ala Leu Ile Gln Ser Val Lys Lys Leu Ala Asp Val Met Val Leu
                245             250             255

aca gtc ttc tgc ctc agc gtc ttt gcc ctc atc ggc ctg cag ctc ttc          816
Thr Val Phe Cys Leu Ser Val Phe Ala Leu Ile Gly Leu Gln Leu Phe
                260             265             270

atg ggc aac cta agg cac aag tgc gtg cgc aac ttc aca gcg ctc aac          864
Met Gly Asn Leu Arg His Lys Cys Val Arg Asn Phe Thr Ala Leu Asn
                275             280             285

ggc acc aac ggc tcc gtg gag gcc gac ggc ttg gtc tgg gaa tcc ctg          912
Gly Thr Asn Gly Ser Val Glu Ala Asp Gly Leu Val Trp Glu Ser Leu
290             295             300

gac ctt tac ctc agt gat cca gaa aat tac ctg ctc aag aac ggc acc          960
Asp Leu Tyr Leu Ser Asp Pro Glu Asn Tyr Leu Leu Lys Asn Gly Thr
305             310             315             320

tct gat gtg tta ctg tgt ggg aac agc tct gac gct ggg aca tgt ccg          1008
Ser Asp Val Leu Leu Cys Gly Asn Ser Ser Asp Ala Gly Thr Cys Pro
                325             330             335

gag ggc tac cgg tgc cta aag gca ggc gag aac ccc gac cac ggc tac          1056
Glu Gly Tyr Arg Cys Leu Lys Ala Gly Glu Asn Pro Asp His Gly Tyr
                340             345             350

acc agc ttc gat tcc ttt gcc tgg gcc ttt ctt gca ctc ttc cgc ctg          1104
Thr Ser Phe Asp Ser Phe Ala Trp Ala Phe Leu Ala Leu Phe Arg Leu
                355             360             365

atg acg cag gac tgc tgg gag cgc ctc tat cag cag acc ctc agg tcc          1152
Met Thr Gln Asp Cys Trp Glu Arg Leu Tyr Gln Gln Thr Leu Arg Ser
370             375             380

gca ggg aag atc tac atg atc ttc ttc atg ctt gtc atc ttc ctg ggg          1200
Ala Gly Lys Ile Tyr Met Ile Phe Phe Met Leu Val Ile Phe Leu Gly
```

```
     385                    390                    395                    400

tcc ttc tac ctg gtg aac ctg atc ctg gcc gtg gtc gca atg gcc tat        1248
Ser Phe Tyr Leu Val Asn Leu Ile Leu Ala Val Val Ala Met Ala Tyr
            405                    410                    415

gag gag caa aac caa gcc acc atc gct gag acc gag gag aag gaa aag        1296
Glu Glu Gln Asn Gln Ala Thr Ile Ala Glu Thr Glu Glu Lys Glu Lys
            420                    425                    430

cgc ttc cag gag gcc atg gaa atg ctc aag aaa gaa cac gag gcc ctc       ·1344
Arg Phe Gln Glu Ala Met Glu Met Leu Lys Lys Glu His Glu Ala Leu
            435                    440                    445

acc atc agg ggt gtg gat acc gtg tcc cgt agc tcc ttg gag atg tcc        1392
Thr Ile Arg Gly Val Asp Thr Val Ser Arg Ser Ser Leu Glu Met Ser
            450                    455                    460

cct ttg gcc cca gta aac agc cat gag aga aga agc aag agg aga aaa        1440
Pro Leu Ala Pro Val Asn Ser His Glu Arg Arg Ser Lys Arg Arg Lys
465                    470                    475                    480

cgg atg tct tca gga act gag gag tgt ggg gag gac agg ctc ccc aag        1488
Arg Met Ser Ser Gly Thr Glu Glu Cys Gly Glu Asp Arg Leu Pro Lys
            485                    490                    495

tct gac tca gaa gat ggt ccc aga gca atg aat cat ctc agc ctc acc        1536
Ser Asp Ser Glu Asp Gly Pro Arg Ala Met Asn His Leu Ser Leu Thr
            500                    505                    510

cgt ggc ctc agc agg act tct atg aag cca cgt tcc agc cgc ggg agc        1584
Arg Gly Leu Ser Arg Thr Ser Met Lys Pro Arg Ser Ser Arg Gly Ser
            515                    520                    525

att ttc acc ttt cgc agg cga gac ctg ggt tct gaa gca gat ttt gca        1632
Ile Phe Thr Phe Arg Arg Arg Asp Leu Gly Ser Glu Ala Asp Phe Ala
            530                    535                    540

gat gat gaa aac agc aca gcg ggg gag agc gag agc cac cgc aca tca        1680
Asp Asp Glu Asn Ser Thr Ala Gly Glu Ser Glu Ser His Arg Thr Ser
545                    550                    555                    560

ctg ctg gtg ccc tgg ccc ctg cgc cgg acc agt gcc cag gga cag ccc        1728
Leu Leu Val Pro Trp Pro Leu Arg Arg Thr Ser Ala Gln Gly Gln Pro
            565                    570                    575

agt ccc gga acc tcg gct cct ggc cac gcc ctc cat ggc aaa aag aac        1776
Ser Pro Gly Thr Ser Ala Pro Gly His Ala Leu His Gly Lys Lys Asn
            580                    585                    590

agc act gtg gac tgc aat ggg gtg gtc tca tta ctg ggg gca ggc gac        1824
Ser Thr Val Asp Cys Asn Gly Val Val Ser Leu Leu Gly Ala Gly Asp
            595                    600                    605

cca gag gcc aca tcc cca gga agc cac ctc ctc cgc cct gtg atg cta        1872
Pro Glu Ala Thr Ser Pro Gly Ser His Leu Leu Arg Pro Val Met Leu
            610                    615                    620

gag cac ccg cca gac acg acc acg cca tcg gag gag cca ggc ggg ccc        1920
Glu His Pro Pro Asp Thr Thr Thr Pro Ser Glu Glu Pro Gly Gly Pro
625                    630                    635                    640

cag atg ctg acc tcc cag gct ccg tgt gta gat ggc ttc gag gag cca        1968
```

```
Gln Met Leu Thr Ser Gln Ala Pro Cys Val Asp Gly Phe Glu Glu Pro
                645             650                 655

gga gca cgg cag cgg gcc ctc agc gca gtc agc gtc ctc acc agc gca      2016
Gly Ala Arg Gln Arg Ala Leu Ser Ala Val Ser Val Leu Thr Ser Ala
            660                 665                 670

ctg gaa gag tta gag gag tct cgc cac aag tgt cca cca tgc tgg aac      2064
Leu Glu Glu Leu Glu Glu Ser Arg His Lys Cys Pro Pro Cys Trp Asn
            675                 680                 685

cgt ctc gcc cag cgc tac ctg atc tgg gag tgc tgc ccg ctg tgg atg      2112
Arg Leu Ala Gln Arg Tyr Leu Ile Trp Glu Cys Cys Pro Leu Trp Met
        690                 695                 700

tcc atc aag cag gga gtg aag ttg gtg gtc atg gac ccg ttt act gac      2160
Ser Ile Lys Gln Gly Val Lys Leu Val Val Met Asp Pro Phe Thr Asp
705                 710                 715                 720

ctc acc atc act atg tgc atc gta ctc aac aca ctc ttc atg gcg ctg      2208
Leu Thr Ile Thr Met Cys Ile Val Leu Asn Thr Leu Phe Met Ala Leu
                725                 730                 735

gag cac tac aac atg aca agt gaa ttc gag gag atg ctg cag gtc gga      2256
Glu His Tyr Asn Met Thr Ser Glu Phe Glu Glu Met Leu Gln Val Gly
            740                 745                 750

aac ctg gtc ttc aca ggg att ttc aca gca gag atg acc ttc aag atc      2304
Asn Leu Val Phe Thr Gly Ile Phe Thr Ala Glu Met Thr Phe Lys Ile
            755                 760                 765

att gcc ctc gac ccc tac tac tac ttc caa cag ggc tgg aac atc ttc      2352
Ile Ala Leu Asp Pro Tyr Tyr Tyr Phe Gln Gln Gly Trp Asn Ile Phe
        770                 775                 780

gac agc atc atc gtc atc ctt agc ctc atg gag ctg ggc ctg tcc cgc      2400
Asp Ser Ile Ile Val Ile Leu Ser Leu Met Glu Leu Gly Leu Ser Arg
785                 790                 795                 800

atg agc aac ttg tcg gtg ctg cgc tcc ttc cgc ctg ctg cgg gtc ttc      2448
Met Ser Asn Leu Ser Val Leu Arg Ser Phe Arg Leu Leu Arg Val Phe
                805                 810                 815

aag ctg gcc aaa tca tgg ccc acc ctg aac aca ctc atc aag atc atc      2496
Lys Leu Ala Lys Ser Trp Pro Thr Leu Asn Thr Leu Ile Lys Ile Ile
            820                 825                 830

ggg aac tca gtg ggg gca ctg ggg aac ctg aca ctg gtg cta gcc atc      2544
Gly Asn Ser Val Gly Ala Leu Gly Asn Leu Thr Leu Val Leu Ala Ile
            835                 840                 845

atc gtg ttc atc ttt gct gtg gtg ggc atg cag ctc ttt ggc aag aac      2592
Ile Val Phe Ile Phe Ala Val Val Gly Met Gln Leu Phe Gly Lys Asn
        850                 855                 860

tac tcg gag ctg agg gac agc gac tca ggc ctg ctg cct cgc tgg cac      2640
Tyr Ser Glu Leu Arg Asp Ser Asp Ser Gly Leu Leu Pro Arg Trp His
865                 870                 875                 880

atg atg gac ttc ttt cat gcc ttc ctc atc atc ttc cgc atc ctc tgt      2688
Met Met Asp Phe Phe His Ala Phe Leu Ile Ile Phe Arg Ile Leu Cys
                885                 890                 895
```

```
gga gag tgg atc gag acc atg tgg gac tgc atg gag gtg tcg ggg cag          2736
Gly Glu Trp Ile Glu Thr Met Trp Asp Cys Met Glu Val Ser Gly Gln
            900                 905                 910

tca tta tgc ctg ctg gtc ttc ttg ctt gtt atg gtc att ggc aac ctt          2784
Ser Leu Cys Leu Leu Val Phe Leu Leu Val Met Val Ile Gly Asn Leu
            915                 920                 925

gtg gtc ctg aat ctc ttc ctg gcc ttg ctg ctc agc tcc ttc agt gca          2832
Val Val Leu Asn Leu Phe Leu Ala Leu Leu Leu Ser Ser Phe Ser Ala
            930                 935                 940

gac aac ctc aca gcc cct gat gag gac aga gag atg aac aac ctc cag          2880
Asp Asn Leu Thr Ala Pro Asp Glu Asp Arg Glu Met Asn Asn Leu Gln
945                 950                 955                 960

ctg gcc ctg gcc cgc atc cag agg ggc ctg cgc ttt gtc aag cgg acc          2928
Leu Ala Leu Ala Arg Ile Gln Arg Gly Leu Arg Phe Val Lys Arg Thr
            965                 970                 975

acc tgg gat ttc tgc tgt ggt ctc ctg cgg cag cgg cct cag aag ccc          2976
Thr Trp Asp Phe Cys Cys Gly Leu Leu Arg Gln Arg Pro Gln Lys Pro
            980                 985                 990

gca gcc ctt gcc gcc cag ggc cag  ctg ccc agc tgc att  gcc acc ccc        3024
Ala Ala Leu Ala Ala Gln Gly Gln  Leu Pro Ser Cys Ile  Ala Thr Pro
            995                 1000                1005

tac tcc  ccg cca ccc cca gag  acg gag aag gtg cct  ccc acc cgc           3069
Tyr Ser  Pro Pro Pro Pro Glu  Thr Glu Lys Val Pro  Pro Thr Arg
    1010                1015                1020

aag gaa  aca cgg ttt gag gaa  ggc gag caa cca ggc  cag ggc acc           3114
Lys Glu  Thr Arg Phe Glu Glu  Gly Glu Gln Pro Gly  Gln Gly Thr
    1025                1030                1035

ccc ggg  gat cca gag ccc gtg  tgt gtg ccc atc gct  gtg gcc gag           3159
Pro Gly  Asp Pro Glu Pro Val  Cys Val Pro Ile Ala  Val Ala Glu
    1040                1045                1050

tca gac  aca gat gac caa gaa  gaa gat gag gag aac  agc ctg ggc           3204
Ser Asp  Thr Asp Asp Gln Glu  Glu Asp Glu Glu Asn  Ser Leu Gly
    1055                1060                1065

acg gag  gag gag tcc agc aag  cag cag gaa tcc cag  cct gtg tcc           3249
Thr Glu  Glu Glu Ser Ser Lys  Gln Gln Glu Ser Gln  Pro Val Ser
    1070                1075                1080

ggt ggc  cca gag gcc cct ccg  gat tcc agg acc tgg  agc cag gtg           3294
Gly Gly  Pro Glu Ala Pro Pro  Asp Ser Arg Thr Trp  Ser Gln Val
    1085                1090                1095

tca gcg  act gcc tcc tct gag  gcc gag gcc agt gca  tct cag gcc           3339
Ser Ala  Thr Ala Ser Ser Glu  Ala Glu Ala Ser Ala  Ser Gln Ala
    1100                1105                1110

gac tgg  cgg cag cag tgg aaa  gcg gaa ccc cag gcc  cca ggg tgc           3384
Asp Trp  Arg Gln Gln Trp Lys  Ala Glu Pro Gln Ala  Pro Gly Cys
    1115                1120                1125

ggt gag  acc cca gag gac agt  tgc tcc gag ggc agc  aca gca gac           3429
Gly Glu  Thr Pro Glu Asp Ser  Cys Ser Glu Gly Ser  Thr Ala Asp
    1130                1135                1140
```

```
atg acc  aac acc gct gag ctc  ctg gag cag atc cct  gac ctc ggc      3474
Met Thr  Asn Thr Ala Glu Leu  Leu Glu Gln Ile Pro  Asp Leu Gly
    1145             1150              1155

cag gat  gtc aag gac cca gag  gac tgc ttc act gaa  ggc tgt gtc      3519
Gln Asp  Val Lys Asp Pro Glu  Asp Cys Phe Thr Glu  Gly Cys Val
    1160             1165              1170

cgg cgc  tgt ccc tgc tgt gcg  gtg gac acc aca cag  gcc cca ggg      3564
Arg Arg  Cys Pro Cys Cys Ala  Val Asp Thr Thr Gln  Ala Pro Gly
    1175             1180              1185

aag gtc  tgg tgg cgg ttg cgc  aag acc tgc tac cac  atc gtg gag      3609
Lys Val  Trp Trp Arg Leu Arg  Lys Thr Cys Tyr His  Ile Val Glu
    1190             1195              1200

cac agc  tgg ttc gag aca ttc  atc atc ttc atg atc  cta ctc agc      3654
His Ser  Trp Phe Glu Thr Phe  Ile Ile Phe Met Ile  Leu Leu Ser
    1205             1210              1215

agt gga  gcg ctg gcc ttc gag  gac atc tac cta gag  gag cgg aag      3699
Ser Gly  Ala Leu Ala Phe Glu  Asp Ile Tyr Leu Glu  Glu Arg Lys
    1220             1225              1230

acc atc  aag gtt ctg ctt gag  tat gcc gac aag atg  ttc aca tat      3744
Thr Ile  Lys Val Leu Leu Glu  Tyr Ala Asp Lys Met  Phe Thr Tyr
    1235             1240              1245

gtc ttc  gtg ctg gag atg ctg  ctc aag tgg gtg gcc  tac ggc ttc      3789
Val Phe  Val Leu Glu Met Leu  Leu Lys Trp Val Ala  Tyr Gly Phe
    1250             1255              1260

aag aag  tac ttc acc aat gcc  tgg tgc tgg ctc gac  ttc ctc atc      3834
Lys Lys  Tyr Phe Thr Asn Ala  Trp Cys Trp Leu Asp  Phe Leu Ile
    1265             1270              1275

gta gac  gtc tct ctg gtc agc  ctg gtg gcc aac acc  ctg ggc ttt      3879
Val Asp  Val Ser Leu Val Ser  Leu Val Ala Asn Thr  Leu Gly Phe
    1280             1285              1290

gcc gag  atg ggt ccc atc aag  tca ctg cgg acg ctg  cgt gca ctc      3924
Ala Glu  Met Gly Pro Ile Lys  Ser Leu Arg Thr Leu  Arg Ala Leu
    1295             1300              1305

cgt cct  ctg aga gct ctg tca  cga ttt gag ggc atg  agg gtg gtg      3969
Arg Pro  Leu Arg Ala Leu Ser  Arg Phe Glu Gly Met  Arg Val Val
    1310             1315              1320

gtc aat  gcc ctg gtg ggc gcc  atc ccg tcc atc atg  aac gtc ctc      4014
Val Asn  Ala Leu Val Gly Ala  Ile Pro Ser Ile Met  Asn Val Leu
    1325             1330              1335

ctc gtc  tgc ctc atc ttc tgg  ctc atc ttc agc atc  atg ggc gtg      4059
Leu Val  Cys Leu Ile Phe Trp  Leu Ile Phe Ser Ile  Met Gly Val
    1340             1345              1350

aac ctc  ttt gcg ggg aag ttt  ggg agg tgc atc aac  cag aca gag      4104
Asn Leu  Phe Ala Gly Lys Phe  Gly Arg Cys Ile Asn  Gln Thr Glu
    1355             1360              1365

gga gac  ttg cct ttg aac tac  acc atc gtg aac aac  aag agc cag      4149
Gly Asp  Leu Pro Leu Asn Tyr  Thr Ile Val Asn Asn  Lys Ser Gln
```

```
          1370                        1375                        1380

tgt gag  tcc ttg aac ttg acc  gga gaa ttg tac tgg  acc aag gtg          4194
Cys Glu  Ser Leu Asn Leu Thr  Gly Glu Leu Tyr Trp  Thr Lys Val
     1385                       1390                      1395

aaa gtc  aac ttt gac aac gtg  ggg gcc ggg tac ctg  gcc ctt ctg          4239
Lys Val  Asn Phe Asp Asn Val  Gly Ala Gly Tyr Leu  Ala Leu Leu
     1400                       1405                      1410

cag gtg  gca aca ttt aaa ggc  tgg atg gac att atg  tat gca gct          4284
Gln Val  Ala Thr Phe Lys Gly  Trp Met Asp Ile Met  Tyr Ala Ala
     1415                       1420                      1425

gtg gac  tcc agg ggg tat gaa  gag cag cct cag tgg  gaa tac aac          4329
Val Asp  Ser Arg Gly Tyr Glu  Glu Gln Pro Gln Trp  Glu Tyr Asn
     1430                       1435                      1440

ctc tac  atg tac atc tat ttt  gtc att ttc atc atc  ttt ggg tct          4374
Leu Tyr  Met Tyr Ile Tyr Phe  Val Ile Phe Ile Ile  Phe Gly Ser
     1445                       1450                      1455

ttc ttc  acc ctg aac ctc ttt  att ggt gtc atc att  gac aac ttc          4419
Phe Phe  Thr Leu Asn Leu Phe  Ile Gly Val Ile Ile  Asp Asn Phe
     1460                       1465                      1470

aac caa  cag aag aaa aag tta  ggg ggc cag gac atc  ttc atg aca          4464
Asn Gln  Gln Lys Lys Lys Leu  Gly Gly Gln Asp Ile  Phe Met Thr
     1475                       1480                      1485

gag gag  cag aag aag tac tac  aat gcc atg aag aag  ctg ggc tcc          4509
Glu Glu  Gln Lys Lys Tyr Tyr  Asn Ala Met Lys Lys  Leu Gly Ser
     1490                       1495                      1500

aag aag  ccc cag aag ccc atc  cca cgg ccc ctg aac  aag tac cag          4554
Lys Lys  Pro Gln Lys Pro Ile  Pro Arg Pro Leu Asn  Lys Tyr Gln
     1505                       1510                      1515

ggc ttc  ata ttc gac att gtg  acc aag cag gcc ttt  gac gtc acc          4599
Gly Phe  Ile Phe Asp Ile Val  Thr Lys Gln Ala Phe  Asp Val Thr
     1520                       1525                      1530

atc atg  ttt ctg atc tgc ttg  aat atg gtg acc atg  atg gtg gag          4644
Ile Met  Phe Leu Ile Cys Leu  Asn Met Val Thr Met  Met Val Glu
     1535                       1540                      1545

aca gat  gac caa agt cct gag  aaa atc aac atc ttg  gcc aag atc          4689
Thr Asp  Asp Gln Ser Pro Glu  Lys Ile Asn Ile Leu  Ala Lys Ile
     1550                       1555                      1560

aac ctg  ctc ttt gtg gcc atc  ttc aca ggc gag tgt  att gtc aag          4734
Asn Leu  Leu Phe Val Ala Ile  Phe Thr Gly Glu Cys  Ile Val Lys
     1565                       1570                      1575

ctg gct  gcc ctg cgc cac tac  tac ttc acc aac agc  tgg aat atc          4779
Leu Ala  Ala Leu Arg His Tyr  Tyr Phe Thr Asn Ser  Trp Asn Ile
     1580                       1585                      1590

ttc gac  ttc gtg gtt gtc atc  ctc tcc atc gtg ggc  act gtg ctc          4824
Phe Asp  Phe Val Val Val Ile  Leu Ser Ile Val Gly  Thr Val Leu
     1595                       1600                      1605

tcg gac  atc atc cag aag tac  ttc ttc tcc ccg acg  ctc ttc cga          4869
```

```
Ser Asp Ile Ile Gln Lys Tyr   Phe Phe Ser Pro Thr   Leu Phe Arg
    1610            1615                1620

gtc atc cgc ctg gcc cga ata   ggc cgc atc ctc aga   ctg atc cga        4914
Val Ile Arg Leu Ala Arg Ile   Gly Arg Ile Leu Arg   Leu Ile Arg
    1625            1630                1635

ggg gcc aag ggg atc cgc acg   ctg ctc ttt gcc ctc   atg atg tcc        4959
Gly Ala Lys Gly Ile Arg Thr   Leu Leu Phe Ala Leu   Met Met Ser
    1640            1645                1650

ctg cct gcc ctc ttc aac atc   ggg ctg ctg ctc ttc   ctc gtc atg        5004
Leu Pro Ala Leu Phe Asn Ile   Gly Leu Leu Leu Phe   Leu Val Met
    1655            1660                1665

ttc atc tac tcc atc ttt ggc   atg gcc aac ttc gct   tat gtc aag        5049
Phe Ile Tyr Ser Ile Phe Gly   Met Ala Asn Phe Ala   Tyr Val Lys
    1670            1675                1680

tgg gag gct ggc atc gac gac   atg ttc aac ttc cag   acc ttc gcc        5094
Trp Glu Ala Gly Ile Asp Asp   Met Phe Asn Phe Gln   Thr Phe Ala
    1685            1690                1695

aac agc atg ctg tgc ctc ttc   cag atc acc acg tcg   gcc ggc tgg        5139
Asn Ser Met Leu Cys Leu Phe   Gln Ile Thr Thr Ser   Ala Gly Trp
    1700            1705                1710

gat ggc ctc ctc agc ccc atc   ctc aac act ggg ccg   ccc tac tgc        5184
Asp Gly Leu Leu Ser Pro Ile   Leu Asn Thr Gly Pro   Pro Tyr Cys
    1715            1720                1725

gac ccc act ctg ccc aac agc   aat ggc tct cgg ggg   gac tgc ggg        5229
Asp Pro Thr Leu Pro Asn Ser   Asn Gly Ser Arg Gly   Asp Cys Gly
    1730            1735                1740

agc cca gcc gtg ggc atc ctc   ttc ttc acc acc tac   atc atc atc        5274
Ser Pro Ala Val Gly Ile Leu   Phe Phe Thr Thr Tyr   Ile Ile Ile
    1745            1750                1755

tcc ttc ctc atc gtg gtc aac   atg tac att gcc atc   atc ctg gag        5319
Ser Phe Leu Ile Val Val Asn   Met Tyr Ile Ala Ile   Ile Leu Glu
    1760            1765                1770

aac ttc agc gtg gcc acg gag   gag agc acc gag ccc   ctg agt gag        5364
Asn Phe Ser Val Ala Thr Glu   Glu Ser Thr Glu Pro   Leu Ser Glu
    1775            1780                1785

gac gac ttc gat atg ttc tat   gag atc tgg gag aaa   ttt gac cca        5409
Asp Asp Phe Asp Met Phe Tyr   Glu Ile Trp Glu Lys   Phe Asp Pro
    1790            1795                1800

gag gcc act cag ttt att gag   tat tcg gtc ctg tct   gac ttt gcc        5454
Glu Ala Thr Gln Phe Ile Glu   Tyr Ser Val Leu Ser   Asp Phe Ala
    1805            1810                1815

gat gcc ctg tct gag cca ctc   cgt atc gcc aag ccc   aac cag ata        5499
Asp Ala Leu Ser Glu Pro Leu   Arg Ile Ala Lys Pro   Asn Gln Ile
    1820            1825                1830

agc ctc atc aac atg gac ctg   ccc atg gtg agt ggg   gac cgc atc        5544
Ser Leu Ile Asn Met Asp Leu   Pro Met Val Ser Gly   Asp Arg Ile
    1835            1840                1845
```

```
cat tgc atg gac att ctc ttt  gcc ttc acc aaa agg  gtc ctg ggg        5589
His Cys Met Asp Ile Leu Phe  Ala Phe Thr Lys Arg  Val Leu Gly
    1850            1855              1860

gag tct ggg gag atg gac gcc  ctg aag atc cag atg  gag gag aag        5634
Glu Ser Gly Glu Met Asp Ala  Leu Lys Ile Gln Met  Glu Glu Lys
    1865            1870              1875

ttc atg gca gcc aac cca tcc  aag atc tcc tac gag  ccc atc acc        5679
Phe Met Ala Ala Asn Pro Ser  Lys Ile Ser Tyr Glu  Pro Ile Thr
    1880            1885              1890

acc aca ctc cgg cgc aag cac  gaa gag gtg tcg gcc  atg gtt atc        5724
Thr Thr Leu Arg Arg Lys His  Glu Glu Val Ser Ala  Met Val Ile
    1895            1900              1905

cag aga gcc ttc cgc agg cac  ctg ctg caa cgc tct  ttg aag cat        5769
Gln Arg Ala Phe Arg Arg His  Leu Leu Gln Arg Ser  Leu Lys His
    1910            1915              1920

gcc tcc ttc ctc ttc cgt cag  cag gcg ggc agc ggc  ctc tcc gaa        5814
Ala Ser Phe Leu Phe Arg Gln  Gln Ala Gly Ser Gly  Leu Ser Glu
    1925            1930              1935

gag gat gcc cct gag cga gag  ggc ctc atc gcc tac  gtg atg agt        5859
Glu Asp Ala Pro Glu Arg Glu  Gly Leu Ile Ala Tyr  Val Met Ser
    1940            1945              1950

gag aac ttc tcc cga ccc ctt  ggc cca ccc tcc agc  tcc tcc atc        5904
Glu Asn Phe Ser Arg Pro Leu  Gly Pro Pro Ser Ser  Ser Ser Ile
    1955            1960              1965

tcc tcc act tcc ttc cca ccc  tcc tat gac agt gtc  act aga gcc        5949
Ser Ser Thr Ser Phe Pro Pro  Ser Tyr Asp Ser Val  Thr Arg Ala
    1970            1975              1980

acc agc gat aac ctc cag gtg  cgg ggg tct gac tac  agc cac agt        5994
Thr Ser Asp Asn Leu Gln Val  Arg Gly Ser Asp Tyr  Ser His Ser
    1985            1990              1995

gaa gat ctc gcc gac ttc ccc  cct tct ccg gac agg  gac cgt gag        6039
Glu Asp Leu Ala Asp Phe Pro  Pro Ser Pro Asp Arg  Asp Arg Glu
    2000            2005              2010

tcc atc gtg tgagcctcgg cctggctggc caggacacac tgaaaagcag              6088
Ser Ile Val
    2015

ccttttttcac catggcaaac ctaaatgcag tcagtcamaa accagcctgg ggccttcctg   6148

gctttgggag taagaaatgg gcct                                           6172


<210>  4
<211>  2016
<212>  PRT
<213>  Homo sapiens

<400>  4

Met Ala Asn Phe Leu Leu Pro Arg Gly Thr Ser Ser Phe Arg Arg Phe
1               5                   10                  15
```

Thr Arg Glu Ser Leu Ala Ala Ile Glu Lys Arg Met Ala Glu Lys Gln
            20   25   30

Ala Arg Gly Ser Thr Thr Leu Gln Glu Ser Arg Glu Gly Leu Pro Glu
            35   40   45

Glu Glu Ala Pro Arg Pro Gln Leu Asp Leu Gln Ala Ser Lys Lys Leu
    50   55   60

Pro Asp Leu Tyr Gly Asn Pro Pro Gln Glu Leu Ile Gly Glu Pro Leu
65   70   75   80

Glu Asp Leu Asp Pro Phe Tyr Ser Thr Gln Lys Thr Phe Ile Val Leu
                85   90   95

Asn Lys Gly Lys Thr Ile Phe Arg Phe Ser Ala Thr Asn Ala Leu Tyr
            100   105   110

Val Leu Ser Pro Phe His Pro Ile Arg Arg Ala Ala Val Lys Ile Leu
            115   120   125

Val His Ser Leu Phe Asn Met Leu Ile Met Cys Thr Ile Leu Thr Asn
    130   135   140

Cys Val Phe Met Ala Gln His Asp Pro Pro Pro Trp Thr Lys Tyr Val
145   150   155   160

Glu Tyr Thr Phe Thr Ala Ile Tyr Thr Phe Glu Ser Leu Val Lys Ile
                165   170   175

Leu Ala Arg Gly Phe Cys Leu His Ala Phe Thr Phe Leu Arg Asp Pro
            180   185   190

Trp Asn Trp Leu Asp Phe Ser Val Ile Ile Met Ala Tyr Thr Thr Glu
            195   200   205

Phe Val Asp Leu Gly Asn Val Ser Ala Leu Arg Thr Phe Arg Val Leu
    210   215   220

Arg Ala Leu Lys Thr Ile Ser Val Ile Ser Gly Leu Lys Thr Ile Val
225   230   235   240

Gly Ala Leu Ile Gln Ser Val Lys Lys Leu Ala Asp Val Met Val Leu
                245   250   255

Thr Val Phe Cys Leu Ser Val Phe Ala Leu Ile Gly Leu Gln Leu Phe
            260   265   270

```
Met Gly Asn Leu Arg His Lys Cys Val Arg Asn Phe Thr Ala Leu Asn
        275                 280                 285

Gly Thr Asn Gly Ser Val Glu Ala Asp Gly Leu Val Trp Glu Ser Leu
        290                 295                 300

Asp Leu Tyr Leu Ser Asp Pro Glu Asn Tyr Leu Leu Lys Asn Gly Thr
305                 310                 315                 320

Ser Asp Val Leu Leu Cys Gly Asn Ser Ser Asp Ala Gly Thr Cys Pro
                325                 330                 335

Glu Gly Tyr Arg Cys Leu Lys Ala Gly Glu Asn Pro Asp His Gly Tyr
                340                 345                 350

Thr Ser Phe Asp Ser Phe Ala Trp Ala Phe Leu Ala Leu Phe Arg Leu
        355                 360                 365

Met Thr Gln Asp Cys Trp Glu Arg Leu Tyr Gln Gln Thr Leu Arg Ser
        370                 375                 380

Ala Gly Lys Ile Tyr Met Ile Phe Phe Met Leu Val Ile Phe Leu Gly
385                 390                 395                 400

Ser Phe Tyr Leu Val Asn Leu Ile Leu Ala Val Val Ala Met Ala Tyr
                405                 410                 415

Glu Glu Gln Asn Gln Ala Thr Ile Ala Glu Thr Glu Glu Lys Glu Lys
                420                 425                 430

Arg Phe Gln Glu Ala Met Glu Met Leu Lys Lys Glu His Glu Ala Leu
        435                 440                 445

Thr Ile Arg Gly Val Asp Thr Val Ser Arg Ser Ser Leu Glu Met Ser
        450                 455                 460

Pro Leu Ala Pro Val Asn Ser His Glu Arg Arg Ser Lys Arg Arg Lys
465                 470                 475                 480

Arg Met Ser Ser Gly Thr Glu Glu Cys Gly Glu Asp Arg Leu Pro Lys
                485                 490                 495

Ser Asp Ser Glu Asp Gly Pro Arg Ala Met Asn His Leu Ser Leu Thr
                500                 505                 510

Arg Gly Leu Ser Arg Thr Ser Met Lys Pro Arg Ser Ser Arg Gly Ser
```

515   520   525

Ile Phe Thr Phe Arg Arg Arg Asp Leu Gly Ser Glu Ala Asp Phe Ala
    530   535   540

Asp Asp Glu Asn Ser Thr Ala Gly Glu Ser Glu Ser His Arg Thr Ser
545   550   555   560

Leu Leu Val Pro Trp Pro Leu Arg Arg Thr Ser Ala Gln Gly Gln Pro
                565   570   575

Ser Pro Gly Thr Ser Ala Pro Gly His Ala Leu His Gly Lys Lys Asn
                580   585   590

Ser Thr Val Asp Cys Asn Gly Val Val Ser Leu Leu Gly Ala Gly Asp
                595   600   605

Pro Glu Ala Thr Ser Pro Gly Ser His Leu Leu Arg Pro Val Met Leu
    610   615   620

Glu His Pro Pro Asp Thr Thr Thr Pro Ser Glu Glu Pro Gly Gly Pro
625   630   635   640

Gln Met Leu Thr Ser Gln Ala Pro Cys Val Asp Gly Phe Glu Glu Pro
                645   650   655

Gly Ala Arg Gln Arg Ala Leu Ser Ala Val Ser Val Leu Thr Ser Ala
                660   665   670

Leu Glu Glu Leu Glu Glu Ser Arg His Lys Cys Pro Pro Cys Trp Asn
                675   680   685

Arg Leu Ala Gln Arg Tyr Leu Ile Trp Glu Cys Cys Pro Leu Trp Met
    690   695   700

Ser Ile Lys Gln Gly Val Lys Leu Val Val Met Asp Pro Phe Thr Asp
705   710   715   720

Leu Thr Ile Thr Met Cys Ile Val Leu Asn Thr Leu Phe Met Ala Leu
                725   730   735

Glu His Tyr Asn Met Thr Ser Glu Phe Glu Glu Met Leu Gln Val Gly
                740   745   750

Asn Leu Val Phe Thr Gly Ile Phe Thr Ala Glu Met Thr Phe Lys Ile
                755   760   765

```
Ile Ala Leu Asp Pro Tyr Tyr Tyr Phe Gln Gln Gly Trp Asn Ile Phe
    770             775             780

Asp Ser Ile Ile Val Ile Leu Ser Leu Met Glu Leu Gly Leu Ser Arg
785             790             795             800

Met Ser Asn Leu Ser Val Leu Arg Ser Phe Arg Leu Leu Arg Val Phe
            805             810             815

Lys Leu Ala Lys Ser Trp Pro Thr Leu Asn Thr Leu Ile Lys Ile Ile
            820             825             830

Gly Asn Ser Val Gly Ala Leu Gly Asn Leu Thr Leu Val Leu Ala Ile
            835             840             845

Ile Val Phe Ile Phe Ala Val Val Gly Met Gln Leu Phe Gly Lys Asn
    850             855             860

Tyr Ser Glu Leu Arg Asp Ser Asp Ser Gly Leu Leu Pro Arg Trp His
865             870             875             880

Met Met Asp Phe Phe His Ala Phe Leu Ile Ile Phe Arg Ile Leu Cys
            885             890             895

Gly Glu Trp Ile Glu Thr Met Trp Asp Cys Met Glu Val Ser Gly Gln
            900             905             910

Ser Leu Cys Leu Leu Val Phe Leu Leu Val Met Val Ile Gly Asn Leu
            915             920             925

Val Val Leu Asn Leu Phe Leu Ala Leu Leu Leu Ser Ser Phe Ser Ala
    930             935             940

Asp Asn Leu Thr Ala Pro Asp Glu Asp Arg Glu Met Asn Asn Leu Gln
945             950             955             960

Leu Ala Leu Ala Arg Ile Gln Arg Gly Leu Arg Phe Val Lys Arg Thr
            965             970             975

Thr Trp Asp Phe Cys Cys Gly Leu Leu Arg Gln Arg Pro Gln Lys Pro
            980             985             990

Ala Ala Leu Ala Ala Gln Gly Gln  Leu Pro Ser Cys Ile  Ala Thr Pro
            995             1000            1005

Tyr Ser  Pro Pro Pro Pro Glu  Thr Glu Lys Val Pro  Pro Thr Arg
    1010            1015            1020
```

```
Lys Glu  Thr Arg Phe Glu Glu  Gly Glu Gln Pro Gly  Gln Gly Thr
    1025                1030             1035

Pro Gly  Asp Pro Glu Pro Val  Cys Val Pro Ile Ala  Val Ala Glu
    1040                1045             1050

Ser Asp  Thr Asp Asp Gln Glu  Glu Asp Glu Glu Asn  Ser Leu Gly
    1055                1060             1065

Thr Glu  Glu Glu Ser Ser Lys  Gln Gln Glu Ser Gln  Pro Val Ser
    1070                1075          ·   1080

Gly Gly  Pro Glu Ala Pro Pro  Asp Ser Arg Thr Trp  Ser Gln Val
    1085                1090             1095

Ser Ala  Thr Ala Ser Ser Glu  Ala Glu Ala Ser Ala  Ser Gln Ala
    1100                1105             1110

Asp Trp  Arg Gln Gln Trp Lys  Ala Glu Pro Gln Ala  Pro Gly Cys
    1115                1120             1125

Gly Glu  Thr Pro Glu Asp Ser  Cys Ser Glu Gly Ser  Thr Ala Asp
    1130                1135             1140

Met Thr  Asn Thr Ala Glu Leu  Leu Glu Gln Ile Pro  Asp Leu Gly
    1145                1150             1155

Gln Asp  Val Lys Asp Pro Glu  Asp Cys Phe Thr Glu  Gly Cys Val
    1160                1165             1170

Arg Arg  Cys Pro Cys Cys Ala  Val Asp Thr Thr Gln  Ala Pro Gly
    1175                1180             1185    .

Lys Val  Trp Trp Arg Leu Arg  Lys Thr Cys Tyr His  Ile Val Glu
    1190                1195             1200

His Ser  Trp Phe Glu Thr Phe  Ile Ile Phe Met Ile  Leu Leu Ser
    1205                1210             1215

Ser Gly  Ala Leu Ala Phe Glu  Asp Ile Tyr Leu Glu  Glu Arg Lys
    1220                1225             1230

Thr Ile  Lys Val Leu Leu Glu  Tyr Ala Asp Lys Met  Phe Thr Tyr
    1235                1240             1245

Val Phe  Val Leu Glu Met Leu  Leu Lys Trp Val Ala  Tyr Gly Phe
    1250                1255             1260
```

Lys Lys Tyr Phe Thr Asn Ala Trp Cys Trp Leu Asp Phe Leu Ile
    1265   1270   1275

Val Asp Val Ser Leu Val Ser Leu Val Ala Asn Thr Leu Gly Phe
    1280   1285   1290

Ala Glu Met Gly Pro Ile Lys Ser Leu Arg Thr Leu Arg Ala Leu
    1295   1300   1305

Arg Pro Leu Arg Ala Leu Ser Arg Phe Glu Gly Met Arg Val Val
    1310   1315   1320

Val Asn Ala Leu Val Gly Ala Ile Pro Ser Ile Met Asn Val Leu
    1325   1330   1335

Leu Val Cys Leu Ile Phe Trp Leu Ile Phe Ser Ile Met Gly Val
    1340   1345   1350

Asn Leu Phe Ala Gly Lys Phe Gly Arg Cys Ile Asn Gln Thr Glu
    1355   1360   1365

Gly Asp Leu Pro Leu Asn Tyr Thr Ile Val Asn Asn Lys Ser Gln
    1370   1375   1380

Cys Glu Ser Leu Asn Leu Thr Gly Glu Leu Tyr Trp Thr Lys Val
    1385   1390   1395

Lys Val Asn Phe Asp Asn Val Gly Ala Gly Tyr Leu Ala Leu Leu
    1400   1405   1410

Gln Val Ala Thr Phe Lys Gly Trp Met Asp Ile Met Tyr Ala Ala
    1415   1420   1425

Val Asp Ser Arg Gly Tyr Glu Glu Gln Pro Gln Trp Glu Tyr Asn
    1430   1435   1440

Leu Tyr Met Tyr Ile Tyr Phe Val Ile Phe Ile Ile Phe Gly Ser
    1445   1450   1455

Phe Phe Thr Leu Asn Leu Phe Ile Gly Val Ile Ile Asp Asn Phe
    1460   1465   1470

Asn Gln Gln Lys Lys Lys Leu Gly Gly Gln Asp Ile Phe Met Thr
    1475   1480   1485

Glu Glu Gln Lys Lys Tyr Tyr Asn Ala Met Lys Lys Leu Gly Ser

```
        1490                    1495                    1500

Lys Lys  Pro Gln Lys Pro Ile  Pro Arg Pro Leu Asn  Lys Tyr Gln
    1505                1510                1515


Gly Phe  Ile Phe Asp Ile Val  Thr Lys Gln Ala Phe  Asp Val Thr
    1520                1525                1530


Ile Met  Phe Leu Ile Cys Leu  Asn Met Val Thr Met  Met Val Glu
    1535                1540                1545


Thr Asp  Asp Gln Ser Pro Glu  Lys Ile Asn Ile Leu  Ala Lys Ile
    1550                1555                1560


Asn Leu  Leu Phe Val Ala Ile  Phe Thr Gly Glu Cys  Ile Val Lys
    1565                1570                1575


Leu Ala  Ala Leu Arg His Tyr  Tyr Phe Thr Asn Ser  Trp Asn Ile
    1580                1585                1590


Phe Asp  Phe Val Val Val Ile  Leu Ser Ile Val Gly  Thr Val Leu
    1595                1600                1605


Ser Asp  Ile Ile Gln Lys Tyr  Phe Phe Ser Pro Thr  Leu Phe Arg
    1610                1615                1620


Val Ile  Arg Leu Ala Arg Ile  Gly Arg Ile Leu Arg  Leu Ile Arg
    1625                1630                1635


Gly Ala  Lys Gly Ile Arg Thr  Leu Leu Phe Ala Leu  Met Met Ser
    1640                1645                1650


Leu Pro  Ala Leu Phe Asn Ile  Gly Leu Leu Leu Phe  Leu Val Met
    1655                1660                1665


Phe Ile  Tyr Ser Ile Phe Gly  Met Ala Asn Phe Ala  Tyr Val Lys
    1670                1675                1680


Trp Glu  Ala Gly Ile Asp Asp  Met Phe Asn Phe Gln  Thr Phe Ala
    1685                1690                1695


Asn Ser  Met Leu Cys Leu Phe  Gln Ile Thr Thr Ser  Ala Gly Trp
    1700                1705                1710


Asp Gly  Leu Leu Ser Pro Ile  Leu Asn Thr Gly Pro  Pro Tyr Cys
    1715                1720                1725
```

```
Asp Pro  Thr Leu Pro Asn Ser  Asn Gly Ser Arg Gly  Asp Cys Gly
    1730             1735                1740

Ser Pro  Ala Val Gly Ile Leu  Phe Phe Thr Thr Tyr  Ile Ile Ile
    1745             1750                1755

Ser Phe  Leu Ile Val Val Asn  Met Tyr Ile Ala Ile  Ile Leu Glu
    1760             1765                1770

Asn Phe  Ser Val Ala Thr Glu  Glu Ser Thr Glu Pro  Leu Ser Glu
    1775             1780                1785

Asp Asp  Phe Asp Met Phe Tyr  Glu Ile Trp Glu Lys  Phe Asp Pro
    1790             1795                1800

Glu Ala  Thr Gln Phe Ile Glu  Tyr Ser Val Leu Ser  Asp Phe Ala
    1805             1810                1815

Asp Ala  Leu Ser Glu Pro Leu  Arg Ile Ala Lys Pro  Asn Gln Ile
    1820             1825                1830

Ser Leu  Ile Asn Met Asp Leu  Pro Met Val Ser Gly  Asp Arg Ile
    1835             1840                1845

His Cys  Met Asp Ile Leu Phe  Ala Phe Thr Lys Arg  Val Leu Gly
    1850             1855                1860

Glu Ser  Gly Glu Met Asp Ala  Leu Lys Ile Gln Met  Glu Glu Lys
    1865             1870                1875

Phe Met  Ala Ala Asn Pro Ser  Lys Ile Ser Tyr Glu  Pro Ile Thr
    1880             1885                1890

Thr Thr  Leu Arg Arg Lys His  Glu Glu Val Ser Ala  Met Val Ile
    1895             1900                1905

Gln Arg  Ala Phe Arg Arg His  Leu Leu Gln Arg Ser  Leu Lys His
    1910             1915                1920

Ala Ser  Phe Leu Phe Arg Gln  Gln Ala Gly Ser Gly  Leu Ser Glu
    1925             1930                1935

Glu Asp  Ala Pro Glu Arg Glu  Gly Leu Ile Ala Tyr  Val Met Ser
    1940             1945                1950

Glu Asn  Phe Ser Arg Pro Leu  Gly Pro Pro Ser Ser  Ser Ser Ile
    1955             1960                1965
```

```
Ser Ser  Thr Ser Phe Pro Pro  Ser Tyr Asp Ser Val  Thr Arg Ala
    1970                1975              1980


Thr Ser  Asp Asn Leu Gln Val  Arg Gly Ser Asp Tyr  Ser His Ser
    1985                1990              1995


Glu Asp  Leu Ala Asp Phe Pro  Pro Ser Pro Asp Arg  Asp Arg Glu
    2000                2005              2010


Ser Ile  Val
    2015



<210>  5
<211>  6169
<212>  DNA
<213>  Homo sapiens



<220>
<221>  CDS
<222>  (1)..(6045)


<400>  5
atg gca aac ttc cta tta cct agg ggc acc agc agc ttc cgc agg ttc      48
Met Ala Asn Phe Leu Leu Pro Arg Gly Thr Ser Ser Phe Arg Arg Phe
1               5                   10                  15

aca cgg gag tcc ctg gca gcc atc gag aag cgc atg gcg gag aag caa      96
Thr Arg Glu Ser Leu Ala Ala Ile Glu Lys Arg Met Ala Glu Lys Gln
                20                  25                  30

gcc cgc ggc tca acc acc ttg cag gag agc cga gag ggg ctg ccc gag     144
Ala Arg Gly Ser Thr Thr Leu Gln Glu Ser Arg Glu Gly Leu Pro Glu
            35                  40                  45

gag gag gct ccc cgg ccc cag ctg gac ctg cag gcc tcc aaa aag ctg     192
Glu Glu Ala Pro Arg Pro Gln Leu Asp Leu Gln Ala Ser Lys Lys Leu
        50                  55                  60

cca gat ctc tat ggc aat cca ccc caa gag ctc atc gga gag ccc ctg     240
Pro Asp Leu Tyr Gly Asn Pro Pro Gln Glu Leu Ile Gly Glu Pro Leu
65                  70                  75                  80

gag gac ctg gac ccc ttc tat agc acc caa aag act ttc atc gta ctg     288
Glu Asp Leu Asp Pro Phe Tyr Ser Thr Gln Lys Thr Phe Ile Val Leu
                85                  90                  95

aat aaa ggc aag acc atc ttc cgg ttc agt gcc acc aac gcc ttg tat     336
Asn Lys Gly Lys Thr Ile Phe Arg Phe Ser Ala Thr Asn Ala Leu Tyr
                100                 105                 110

gtc ctc agt ccc ttc cac ccc atc cgg aga gcg gct gtg aag att ctg     384
Val Leu Ser Pro Phe His Pro Ile Arg Arg Ala Ala Val Lys Ile Leu
            115                 120                 125

gtt cac tcg ctc ttc aac atg ctc atc atg tgc acc atc ctc acc aac     432
Val His Ser Leu Phe Asn Met Leu Ile Met Cys Thr Ile Leu Thr Asn
        130                 135                 140
```

```
tgc gtg ttc atg gcc cag cac gac cct cca ccc tgg acc aag tat gtc          480
Cys Val Phe Met Ala Gln His Asp Pro Pro Pro Trp Thr Lys Tyr Val
145                 150             155                 160

gag tac acc ttc acc gcc att tac acc ttt gag tct ctg gtc aag att          528
Glu Tyr Thr Phe Thr Ala Ile Tyr Thr Phe Glu Ser Leu Val Lys Ile
                    165             170                 175

ctg gct cga ggc ttc tgc ctg cac gcg ttc act ttc ctt cgg gac cca          576
Leu Ala Arg Gly Phe Cys Leu His Ala Phe Thr Phe Leu Arg Asp Pro
                180             185                 190

tgg aac tgg ctg gac ttt agt gtg att atc atg gca tac aca act gaa          624
Trp Asn Trp Leu Asp Phe Ser Val Ile Ile Met Ala Tyr Thr Thr Glu
                195             200                 205

ttt gtg gac ctg ggc aat gtc tca gcc tta cgc acc ttc cga gtc ctc          672
Phe Val Asp Leu Gly Asn Val Ser Ala Leu Arg Thr Phe Arg Val Leu
                210             215                 220

cgg gcc ctg aaa act ata tca gtc att tca ggg ctg aag acc atc gtg          720
Arg Ala Leu Lys Thr Ile Ser Val Ile Ser Gly Leu Lys Thr Ile Val
225                 230             235                 240

ggg gcc ctg atc cag tct gtg aag aag ctg gct gat gtg atg gtc ctc          768
Gly Ala Leu Ile Gln Ser Val Lys Lys Leu Ala Asp Val Met Val Leu
                245             250                 255

aca gtc ttc tgc ctc agc gtc ttt gcc ctc atc ggc ctg cag ctc ttc          816
Thr Val Phe Cys Leu Ser Val Phe Ala Leu Ile Gly Leu Gln Leu Phe
                260             265                 270

atg ggc aac cta agg cac aag tgc gtg cgc aac ttc aca gcg ctc aac          864
Met Gly Asn Leu Arg His Lys Cys Val Arg Asn Phe Thr Ala Leu Asn
                275             280             285

ggc acc aac ggc tcc gtg gag gcc gac ggc ttg gtc tgg gaa tcc ctg          912
Gly Thr Asn Gly Ser Val Glu Ala Asp Gly Leu Val Trp Glu Ser Leu
290                 295             300

gac ctt tac ctc agt gat cca gaa aat tac ctg ctc aag aac ggc acc          960
Asp Leu Tyr Leu Ser Asp Pro Glu Asn Tyr Leu Leu Lys Asn Gly Thr
305                 310             315                 320

tct gat gtg tta ctg tgt ggg aac agc tct gac gct ggg aca tgt ccg          1008
Ser Asp Val Leu Leu Cys Gly Asn Ser Ser Asp Ala Gly Thr Cys Pro
                325             330             335

gag ggc tac cgg tgc cta aag gca ggc gag aac ccc gac cac ggc tac          1056
Glu Gly Tyr Arg Cys Leu Lys Ala Gly Glu Asn Pro Asp His Gly Tyr
                340             345             350

acc agc ttc gat tcc ttt gcc tgg gcc ttt ctt gca ctc ttc cgc ctg          1104
Thr Ser Phe Asp Ser Phe Ala Trp Ala Phe Leu Ala Leu Phe Arg Leu
                355             360             365

atg acg cag gac tgc tgg gag cgc ctc tat cag cag acc ctc agg tcc          1152
Met Thr Gln Asp Cys Trp Glu Arg Leu Tyr Gln Gln Thr Leu Arg Ser
                370             375             380

gca ggg aag atc tac atg atc ttc ttc atg ctt gtc atc ttc ctg ggg          1200
Ala Gly Lys Ile Tyr Met Ile Phe Phe Met Leu Val Ile Phe Leu Gly
```

385					390					395					400	

tcc ttc tac ctg gtg aac ctg atc ctg gcc gtg gtc gca atg gcc tat   1248
Ser Phe Tyr Leu Val Asn Leu Ile Leu Ala Val Val Ala Met Ala Tyr
            405   410   415

gag gag caa aac caa gcc acc atc gct gag acc gag gag aag gaa aag   1296
Glu Glu Gln Asn Gln Ala Thr Ile Ala Glu Thr Glu Glu Lys Glu Lys
            420   425   430

cgc ttc cag gag gcc atg gaa atg ctc aag aaa gaa cac gag gcc ctc   1344
Arg Phe Gln Glu Ala Met Glu Met Leu Lys Lys Glu His Glu Ala Leu
            435   440   445

acc atc agg ggt gtg gat acc gtg tcc cgt agc tcc ttg gag atg tcc   1392
Thr Ile Arg Gly Val Asp Thr Val Ser Arg Ser Ser Leu Glu Met Ser
            450   455   460

cct ttg gcc cca gta aac agc cat gag aga aga agc aag agg aga aaa   1440
Pro Leu Ala Pro Val Asn Ser His Glu Arg Arg Ser Lys Arg Arg Lys
465   470   475   480

cgg atg tct tca gga act gag gag tgt ggg gag gac agg ctc ccc aag   1488
Arg Met Ser Ser Gly Thr Glu Glu Cys Gly Glu Asp Arg Leu Pro Lys
            485   490   495

tct gac tca gaa gat ggt ccc aga gca atg aat cat ctc agc ctc acc   1536
Ser Asp Ser Glu Asp Gly Pro Arg Ala Met Asn His Leu Ser Leu Thr
            500   505   510

cgt ggc ctc agc agg act tct atg aag cca cgt tcc agc cgc ggg agc   1584
Arg Gly Leu Ser Arg Thr Ser Met Lys Pro Arg Ser Ser Arg Gly Ser
            515   520   525

att ttc acc ttt cgc agg cga gac ctg ggt tct gaa gca gat ttt gca   1632
Ile Phe Thr Phe Arg Arg Arg Asp Leu Gly Ser Glu Ala Asp Phe Ala
            530   535   540

gat gat gaa aac agc aca gcg ggg gag agc gag agc cac cac aca tca   1680
Asp Asp Glu Asn Ser Thr Ala Gly Glu Ser Glu Ser His His Thr Ser
545   550   555   560

ctg ctg gtg ccc tgg ccc ctg cgc cgg acc agt gcc cag gga cag ccc   1728
Leu Leu Val Pro Trp Pro Leu Arg Arg Thr Ser Ala Gln Gly Gln Pro
            565   570   575

agt ccc gga acc tcg gct cct ggc cac gcc ctc cat ggc aaa aag aac   1776
Ser Pro Gly Thr Ser Ala Pro Gly His Ala Leu His Gly Lys Lys Asn
            580   585   590

agc act gtg gac tgc aat ggg gtg gtc tca tta ctg ggg gca ggc gac   1824
Ser Thr Val Asp Cys Asn Gly Val Val Ser Leu Leu Gly Ala Gly Asp
            595   600   605

cca gag gcc aca tcc cca gga agc cac ctc ctc cgc cct gtg atg cta   1872
Pro Glu Ala Thr Ser Pro Gly Ser His Leu Leu Arg Pro Val Met Leu
            610   615   620

gag cac ccg cca gac acg acc acg cca tcg gag gag cca ggc ggg ccc   1920
Glu His Pro Pro Asp Thr Thr Thr Pro Ser Glu Glu Pro Gly Gly Pro
625   630   635   640

cag atg ctg acc tcc cag gct ccg tgt gta gat ggc ttc gag gag cca   1968

```
Gln Met Leu Thr Ser Gln Ala Pro Cys Val Asp Gly Phe Glu Glu Pro
            645                 650                 655

gga gca cgg cag cgg gcc ctc agc gca gtc agc gtc ctc acc agc gca        2016
Gly Ala Arg Gln Arg Ala Leu Ser Ala Val Ser Val Leu Thr Ser Ala
            660                 665                 670

ctg gaa gag tta gag gag tct cgc cac aag tgt cca cca tgc tgg aac        2064
Leu Glu Glu Leu Glu Glu Ser Arg His Lys Cys Pro Pro Cys Trp Asn
            675                 680                 685

cgt ctc gcc cag cgc tac ctg atc tgg gag tgc tgc ccg ctg tgg atg        2112
Arg Leu Ala Gln Arg Tyr Leu Ile Trp Glu Cys Cys Pro Leu Trp Met
            690                 695                 700

tcc atc aag cag gga gtg aag ttg gtg gtc atg gac ccg ttt act gac        2160
Ser Ile Lys Gln Gly Val Lys Leu Val Val Met Asp Pro Phe Thr Asp
705                 710                 715                 720

ctc acc atc act atg tgc atc gta ctc aac aca ctc ttc atg gcg ctg        2208
Leu Thr Ile Thr Met Cys Ile Val Leu Asn Thr Leu Phe Met Ala Leu
                    725                 730                 735

gag cac tac aac atg aca agt gaa ttc gag gag atg ctg cag gtc gga        2256
Glu His Tyr Asn Met Thr Ser Glu Phe Glu Glu Met Leu Gln Val Gly
                740                 745                 750

aac ctg gtc ttc aca ggg att ttc aca gca gag atg acc ttc aag atc        2304
Asn Leu Val Phe Thr Gly Ile Phe Thr Ala Glu Met Thr Phe Lys Ile
            755                 760                 765

att gcc ctc gac ccc tac tac tac ttc caa cag ggc tgg aac atc ttc        2352
Ile Ala Leu Asp Pro Tyr Tyr Tyr Phe Gln Gln Gly Trp Asn Ile Phe
770                 775                 780

gac agc atc atc gtc atc ctt agc ctc atg gag ctg ggc ctg tcc cgc        2400
Asp Ser Ile Ile Val Ile Leu Ser Leu Met Glu Leu Gly Leu Ser Arg
785                 790                 795                 800

atg agc aac ttg tcg gtg ctg cgc tcc ttc cgc ctg ctg cgg gtc ttc        2448
Met Ser Asn Leu Ser Val Leu Arg Ser Phe Arg Leu Leu Arg Val Phe
                805                 810                 815

aag ctg gcc aaa tca tgg ccc acc ctg aac aca ctc atc aag atc atc        2496
Lys Leu Ala Lys Ser Trp Pro Thr Leu Asn Thr Leu Ile Lys Ile Ile
            820                 825                 830

ggg aac tca gtg ggg gca ctg ggg aac ctg aca ctg gtg cta gcc atc        2544
Gly Asn Ser Val Gly Ala Leu Gly Asn Leu Thr Leu Val Leu Ala Ile
            835                 840                 845

atc gtg ttc atc ttt gct gtg gtg ggc atg cag ctc ttt ggc aag aac        2592
Ile Val Phe Ile Phe Ala Val Val Gly Met Gln Leu Phe Gly Lys Asn
            850                 855                 860

tac tcg gag ctg agg gac agc gac tca ggc ctg ctg cct cgc tgg cac        2640
Tyr Ser Glu Leu Arg Asp Ser Asp Ser Gly Leu Leu Pro Arg Trp His
865                 870                 875                 880

atg atg gac ttc ttt cat gcc ttc ctc atc atc ttc cgc atc ctc tgt        2688
Met Met Asp Phe Phe His Ala Phe Leu Ile Ile Phe Arg Ile Leu Cys
                885                 890                 895
```

```
gga gag tgg atc gag acc atg tgg gac tgc atg gag gtg tcg ggg cag      2736
Gly Glu Trp Ile Glu Thr Met Trp Asp Cys Met Glu Val Ser Gly Gln
            900                 905                 910

tca tta tgc ctg ctg gtc ttc ttg ctt gtt atg gtc att ggc aac ctt      2784
Ser Leu Cys Leu Leu Val Phe Leu Leu Val Met Val Ile Gly Asn Leu
            915                 920                 925

gtg gtc ctg aat ctc ttc ctg gcc ttg ctg ctc agc tcc ttc agt gca      2832
Val Val Leu Asn Leu Phe Leu Ala Leu Leu Leu Ser Ser Phe Ser Ala
            930                 935                 940

gac aac ctc aca gcc cct gat gag gac aga gag atg aac aac ctc cag      2880
Asp Asn Leu Thr Ala Pro Asp Glu Asp Arg Glu Met Asn Asn Leu Gln
945                 950                 955                 960

ctg gcc ctg gcc cgc atc cag agg ggc ctg cgc ttt gtc aag cgg acc      2928
Leu Ala Leu Ala Arg Ile Gln Arg Gly Leu Arg Phe Val Lys Arg Thr
                965                 970                 975

acc tgg gat ttc tgc tgt ggt ctc ctg cgg cag cgg cct cag aag ccc      2976
Thr Trp Asp Phe Cys Cys Gly Leu Leu Arg Gln Arg Pro Gln Lys Pro
                980                 985                 990

gca gcc ctt gcc gcc cag ggc cag  ctg ccc agc tgc att  gcc acc ccc    3024
Ala Ala Leu Ala Ala Gln Gly Gln  Leu Pro Ser Cys Ile  Ala Thr Pro
                995                 1000                1005

tac tcc  ccg cca ccc cca gag  acg gag aag gtg cct  ccc acc cgc        3069
Tyr Ser  Pro Pro Pro Pro Glu  Thr Glu Lys Val Pro  Pro Thr Arg
    1010                1015                1020

aag gaa  aca cgg ttt gag gaa  ggc gag caa cca ggc  cag ggc acc        3114
Lys Glu  Thr Arg Phe Glu Glu  Gly Glu Gln Pro Gly  Gln Gly Thr
    1025                1030                1035

ccc ggg  gat cca gag ccc gtg  tgt gtg ccc atc gct  gtg gcc gag        3159
Pro Gly  Asp Pro Glu Pro Val  Cys Val Pro Ile Ala  Val Ala Glu
    1040                1045                1050

tca gac  aca gat gac caa gaa  gaa gat gag gag aac  agc ctg ggc        3204
Ser Asp  Thr Asp Asp Gln Glu  Glu Asp Glu Glu Asn  Ser Leu Gly
    1055                1060                1065

acg gag  gag gag tcc agc aag  cag gaa tcc cag cct  gtg tcc ggt        3249
Thr Glu  Glu Glu Ser Ser Lys  Gln Glu Ser Gln Pro  Val Ser Gly
    1070                1075                1080

ggc cca  gag gcc cct ccg gat  tcc agg acc tgg agc  cag gtg tca        3294
Gly Pro  Glu Ala Pro Pro Asp  Ser Arg Thr Trp Ser  Gln Val Ser
    1085                1090                1095

gcg act  gcc tcc tct gag gcc  gag gcc agt gca tct  cag gcc gac        3339
Ala Thr  Ala Ser Ser Glu Ala  Glu Ala Ser Ala Ser  Gln Ala Asp
    1100                1105                1110

tgg cgg  cag cag tgg aaa gcg  gaa ccc cag gcc cca  ggg tgc ggt        3384
Trp Arg  Gln Gln Trp Lys Ala  Glu Pro Gln Ala Pro  Gly Cys Gly
    1115                1120                1125

gag acc  cca gag gac agt tgc  tcc gag ggc agc aca  gca gac atg        3429
Glu Thr  Pro Glu Asp Ser Cys  Ser Glu Gly Ser Thr  Ala Asp Met
    1130                1135                1140
```

```
acc aac acc gct gag ctc ctg  gag cag atc cct gac  ctc ggc cag        3474
Thr Asn Thr Ala Glu Leu Leu  Glu Gln Ile Pro Asp  Leu Gly Gln
    1145             1150              1155

gat gtc aag gac cca gag gac  tgc ttc act gaa ggc  tgt gtc cgg        3519
Asp Val Lys Asp Pro Glu Asp  Cys Phe Thr Glu Gly  Cys Val Arg
    1160             1165              1170

cgc tgt ccc tgc tgt gcg gtg  gac acc aca cag gcc  cca ggg aag        3564
Arg Cys Pro Cys Cys Ala Val  Asp Thr Thr Gln Ala  Pro Gly Lys
    1175             1180              1185

gtc tgg tgg cgg ttg cgc aag  acc tgc tac cac atc  gtg gag cac        3609
Val Trp Trp Arg Leu Arg Lys  Thr Cys Tyr His Ile  Val Glu His
    1190             1195              1200

agc tgg ttc gag aca ttc atc  atc ttc atg atc cta  ctc agc agt        3654
Ser Trp Phe Glu Thr Phe Ile  Ile Phe Met Ile Leu  Leu Ser Ser
    1205             1210              1215

gga gcg ctg gcc ttc gag gac  atc tac cta gag gag  cgg aag acc        3699
Gly Ala Leu Ala Phe Glu Asp  Ile Tyr Leu Glu Glu  Arg Lys Thr
    1220             1225              1230

atc aag gtt ctg ctt gag tat  gcc gac aag atg ttc  aca tat gtc        3744
Ile Lys Val Leu Leu Glu Tyr  Ala Asp Lys Met Phe  Thr Tyr Val
    1235             1240              1245

ttc gtg ctg gag atg ctg ctc  aag tgg gtg gcc tac  ggc ttc aag        3789
Phe Val Leu Glu Met Leu Leu  Lys Trp Val Ala Tyr  Gly Phe Lys
    1250             1255              1260

aag tac ttc acc aat gcc tgg  tgc tgg ctc gac ttc  ctc atc gta        3834
Lys Tyr Phe Thr Asn Ala Trp  Cys Trp Leu Asp Phe  Leu Ile Val
    1265             1270              1275

gac gtc tct ctg gtc agc ctg  gtg gcc aac acc ctg  ggc ttt gcc        3879
Asp Val Ser Leu Val Ser Leu  Val Ala Asn Thr Leu  Gly Phe Ala
    1280             1285              1290

gag atg ggt ccc atc aag tca  ctg cgg acg ctg cgt  gca ctc cgt        3924
Glu Met Gly Pro Ile Lys Ser  Leu Arg Thr Leu Arg  Ala Leu Arg
    1295             1300              1305

cct ctg aga gct ctg tca cga  ttt gag ggc atg agg  gtg gtg gtc        3969
Pro Leu Arg Ala Leu Ser Arg  Phe Glu Gly Met Arg  Val Val Val
    1310             1315              1320

aat gcc ctg gtg ggc gcc atc  ccg tcc atc atg aac  gtc ctc ctc        4014
Asn Ala Leu Val Gly Ala Ile  Pro Ser Ile Met Asn  Val Leu Leu
    1325             1330              1335

gtc tgc ctc atc ttc tgg ctc  atc ttc agc atc atg  ggc gtg aac        4059
Val Cys Leu Ile Phe Trp Leu  Ile Phe Ser Ile Met  Gly Val Asn
    1340             1345              1350

ctc ttt gcg ggg aag ttt ggg  agg tgc atc aac cag  aca gag gga        4104
Leu Phe Ala Gly Lys Phe Gly  Arg Cys Ile Asn Gln  Thr Glu Gly
    1355             1360              1365

gac ttg cct ttg aac tac acc  atc gtg aac aac aag  agc cag tgt        4149
Asp Leu Pro Leu Asn Tyr Thr  Ile Val Asn Asn Lys  Ser Gln Cys
```

```
        1370                           1375                          1380

gag tcc  ttg aac ttg acc gga  gaa ttg tac tgg acc  aag gtg aaa       4194
Glu Ser  Leu Asn Leu Thr Gly  Glu Leu Tyr Trp Thr  Lys Val Lys
        1385                          1390                          1395

gtc aac  ttt gac aac gtg ggg  gcc ggg tac ctg gcc  ctt ctg cag       4239
Val Asn  Phe Asp Asn Val Gly  Ala Gly Tyr Leu Ala  Leu Leu Gln
        1400                          1405                          1410

gtg gca  aca ttt aaa ggc tgg  atg gac att atg tat  gca gct gtg       4284
Val Ala  Thr Phe Lys Gly Trp  Met Asp Ile Met Tyr  Ala Ala Val
        1415                          1420                          1425

gac tcc  agg ggg tat gaa gag  cag cct cag tgg gaa  tac aac ctc       4329
Asp Ser  Arg Gly Tyr Glu Glu  Gln Pro Gln Trp Glu  Tyr Asn Leu
        1430                          1435                          1440

tac atg  tac atc tat ttt gtc  att ttc atc atc ttt  ggg tct ttc       4374
Tyr Met  Tyr Ile Tyr Phe Val  Ile Phe Ile Ile Phe  Gly Ser Phe
        1445                          1450                          1455

ttc acc  ctg aac ctc ttt att  ggt gtc atc att gac  aac ttc aac       4419
Phe Thr  Leu Asn Leu Phe Ile  Gly Val Ile Ile Asp  Asn Phe Asn
        1460                          1465                          1470

caa cag  aag aaa aag tta ggg  ggc cag gac atc ttc  atg aca gag       4464
Gln Gln  Lys Lys Lys Leu Gly  Gly Gln Asp Ile Phe  Met Thr Glu
        1475                          1480                          1485

gag cag  aag aag tac tac aat  gcc atg aag aag ctg  ggc tcc aag       4509
Glu Gln  Lys Lys Tyr Tyr Asn  Ala Met Lys Lys Leu  Gly Ser Lys
        1490                          1495                          1500

aag ccc  cag aag ccc atc cca  cgg ccc ctg aac aag  tac cag ggc       4554
Lys Pro  Gln Lys Pro Ile Pro  Arg Pro Leu Asn Lys  Tyr Gln Gly
        1505                          1510                          1515

ttc ata  ttc gac att gtg acc  aag cag gcc ttt gac  gtc acc atc       4599
Phe Ile  Phe Asp Ile Val Thr  Lys Gln Ala Phe Asp  Val Thr Ile
        1520                          1525                          1530

atg ttt  ctg atc tgc ttg aat  atg gtg acc atg atg  gtg gag aca       4644
Met Phe  Leu Ile Cys Leu Asn  Met Val Thr Met Met  Val Glu Thr
        1535                          1540                          1545

gat gac  caa agt cct gag aaa  atc aac atc ttg gcc  aag atc aac       4689
Asp Asp  Gln Ser Pro Glu Lys  Ile Asn Ile Leu Ala  Lys Ile Asn
        1550                          1555                          1560

ctg ctc  ttt gtg gcc atc ttc  aca ggc gag tgt att  gtc aag ctg       4734
Leu Leu  Phe Val Ala Ile Phe  Thr Gly Glu Cys Ile  Val Lys Leu
        1565                          1570                          1575

gct gcc  ctg cgc cac tac tac  ttc acc aac agc tgg  aat atc ttc       4779
Ala Ala  Leu Arg His Tyr Tyr  Phe Thr Asn Ser Trp  Asn Ile Phe
        1580                          1585                          1590

gac ttc  gtg gtt gtc atc ctc  tcc atc gtg ggc act  gtg ctc tcg       4824
Asp Phe  Val Val Val Ile Leu  Ser Ile Val Gly Thr  Val Leu Ser
        1595                          1600                          1605

gac atc  atc cag aag tac ttc  ttc tcc ccg acg ctc  ttc cga gtc       4869
```

```
Asp Ile  Ile Gln Lys Tyr Phe  Phe Ser Pro Thr Leu  Phe Arg Val
    1610             1615             1620

atc cgc ctg gcc cga ata ggc  cgc atc ctc aga ctg  atc cga ggg      4914
Ile Arg Leu Ala Arg Ile Gly  Arg Ile Leu Arg Leu  Ile Arg Gly
    1625             1630             1635

gcc aag ggg atc cgc acg ctg  ctc ttt gcc ctc atg  atg tcc ctg      4959
Ala Lys Gly Ile Arg Thr Leu  Leu Phe Ala Leu Met  Met Ser Leu
    1640             1645             1650

cct gcc ctc ttc aac atc ggg  ctg ctg ctc ttc ctc  gtc atg ttc      5004
Pro Ala Leu Phe Asn Ile Gly  Leu Leu Leu Phe Leu  Val Met Phe
    1655             1660             1665

atc tac tcc atc ttt ggc atg  gcc aac ttc gct tat  gtc aag tgg      5049
Ile Tyr Ser Ile Phe Gly Met  Ala Asn Phe Ala Tyr  Val Lys Trp
    1670             1675             1680

gag gct ggc atc gac gac atg  ttc aac ttc cag acc  ttc gcc aac      5094
Glu Ala Gly Ile Asp Asp Met  Phe Asn Phe Gln Thr  Phe Ala Asn
    1685             1690             1695

agc atg ctg tgc ctc ttc cag  atc acc acg tcg gcc  ggc tgg gat      5139
Ser Met Leu Cys Leu Phe Gln  Ile Thr Thr Ser Ala  Gly Trp Asp
    1700             1705             1710

ggc ctc ctc agc ccc atc ctc  aac act ggg ccg ccc  tac tgc gac      5184
Gly Leu Leu Ser Pro Ile Leu  Asn Thr Gly Pro Pro  Tyr Cys Asp
    1715             1720             1725

ccc act ctg ccc aac agc aat  ggc tct cgg ggg gac  tgc ggg agc      5229
Pro Thr Leu Pro Asn Ser Asn  Gly Ser Arg Gly Asp  Cys Gly Ser
    1730             1735             1740

cca gcc gtg ggc atc ctc ttc  ttc acc acc tac atc  atc atc tcc      5274
Pro Ala Val Gly Ile Leu Phe  Phe Thr Thr Tyr Ile  Ile Ile Ser
    1745             1750             1755

ttc ctc atc gtg gtc aac atg  tac att gcc atc atc  ctg gag aac      5319
Phe Leu Ile Val Val Asn Met  Tyr Ile Ala Ile Ile  Leu Glu Asn
    1760             1765             1770

ttc agc gtg gcc acg gag gag  agc acc gag ccc ctg  agt gag gac      5364
Phe Ser Val Ala Thr Glu Glu  Ser Thr Glu Pro Leu  Ser Glu Asp
    1775             1780             1785

gac ttc gat atg ttc tat gag  atc tgg gag aaa ttt  gac cca gag      5409
Asp Phe Asp Met Phe Tyr Glu  Ile Trp Glu Lys Phe  Asp Pro Glu
    1790             1795             1800

gcc act cag ttt att gag tat  tcg gtc ctg tct gac  ttt gcc gat      5454
Ala Thr Gln Phe Ile Glu Tyr  Ser Val Leu Ser Asp  Phe Ala Asp
    1805             1810             1815

gcc ctg tct gag cca ctc cgt  atc gcc aag ccc aac  cag ata agc      5499
Ala Leu Ser Glu Pro Leu Arg  Ile Ala Lys Pro Asn  Gln Ile Ser
    1820             1825             1830

ctc atc aac atg gac ctg ccc  atg gtg agt ggg gac  cgc atc cat      5544
Leu Ile Asn Met Asp Leu Pro  Met Val Ser Gly Asp  Arg Ile His
    1835             1840             1845
```

```
tgc atg  gac att ctc ttt gcc  ttc acc aaa agg gtc  ctg ggg gag          5589
Cys Met  Asp Ile Leu Phe Ala  Phe Thr Lys Arg Val  Leu Gly Glu
    1850             1855              1860

tct ggg  gag atg gac gcc ctg  aag atc cag atg gag  gag aag ttc          5634
Ser Gly  Glu Met Asp Ala Leu  Lys Ile Gln Met Glu  Glu Lys Phe
    1865             1870              1875

atg gca  gcc aac cca tcc aag  atc tcc tac gag ccc  atc acc acc          5679
Met Ala  Ala Asn Pro Ser Lys  Ile Ser Tyr Glu Pro  Ile Thr Thr
    1880             1885              1890

aca ctc  cgg cgc aag cac gaa  gag gtg tcg gcc atg  gtt atc cag          5724
Thr Leu  Arg Arg Lys His Glu  Glu Val Ser Ala Met  Val Ile Gln
    1895             1900              1905

aga gcc  ttc cgc agg cac ctg  ctg caa cgc tct ttg  aag cat gcc          5769
Arg Ala  Phe Arg Arg His Leu  Leu Gln Arg Ser Leu  Lys His Ala
    1910             1915              1920

tcc ttc  ctc ttc cgt cag cag  gcg ggc agc ggc ctc  tcc gaa gag          5814
Ser Phe  Leu Phe Arg Gln Gln  Ala Gly Ser Gly Leu  Ser Glu Glu
    1925             1930              1935

gat gcc  cct gag cga gag ggc  ctc atc gcc tac gtg  atg agt gag          5859
Asp Ala  Pro Glu Arg Glu Gly  Leu Ile Ala Tyr Val  Met Ser Glu
    1940             1945              1950

aac ttc  tcc cga ccc ctt ggc  cca ccc tcc agc tcc  tcc atc tcc          5904
Asn Phe  Ser Arg Pro Leu Gly  Pro Pro Ser Ser Ser  Ser Ile Ser
    1955             1960              1965

tcc act  tcc ttc cca ccc tcc  tat gac agt gtc act  aga gcc acc          5949
Ser Thr  Ser Phe Pro Pro Ser  Tyr Asp Ser Val Thr  Arg Ala Thr
    1970             1975              1980

agc gat  aac ctc cag gtg cgg  ggg tct gac tac agc  cac agt gaa          5994
Ser Asp  Asn Leu Gln Val Arg  Gly Ser Asp Tyr Ser  His Ser Glu
    1985             1990              1995

gat ctc  gcc gac ttc ccc cct  tct ccg gac agg gac  cgt gag tcc          6039
Asp Leu  Ala Asp Phe Pro Pro  Ser Pro Asp Arg Asp  Arg Glu Ser
    2000             2005              2010

atc gtg  tgagcctcgg cctggctggc caggacacac tgaaaagcag ccttttttcac        6095
Ile Val
    2015

catggcaaac ctaaatgcag tcagtcamaa accagcctgg ggccttcctg gctttgggag       6155

taagaaatgg gcct                                                         6169


<210>  6
<211>  2015
<212>  PRT
<213>  Homo sapiens

<400>  6

Met Ala Asn Phe Leu Leu Pro Arg Gly Thr Ser Ser Phe Arg Arg Phe
1                   5                   10                  15
```

```
Thr Arg Glu Ser Leu Ala Ala Ile Glu Lys Arg Met Ala Glu Lys Gln
        20              25                  30

Ala Arg Gly Ser Thr Thr Leu Gln Glu Ser Arg Glu Gly Leu Pro Glu
        35              40                  45

Glu Glu Ala Pro Arg Pro Gln Leu Asp Leu Gln Ala Ser Lys Lys Leu
    50              55                  60

Pro Asp Leu Tyr Gly Asn Pro Pro Gln Glu Leu Ile Gly Glu Pro Leu
65              70              75                      80

Glu Asp Leu Asp Pro Phe Tyr Ser Thr Gln Lys Thr Phe Ile Val Leu
                85              90                  95

Asn Lys Gly Lys Thr Ile Phe Arg Phe Ser Ala Thr Asn Ala Leu Tyr
            100             105             110

Val Leu Ser Pro Phe His Pro Ile Arg Arg Ala Ala Val Lys Ile Leu
        115             120                 125

Val His Ser Leu Phe Asn Met Leu Ile Met Cys Thr Ile Leu Thr Asn
    130             135                 140

Cys Val Phe Met Ala Gln His Asp Pro Pro Pro Trp Thr Lys Tyr Val
145             150             155                     160

Glu Tyr Thr Phe Thr Ala Ile Tyr Thr Phe Glu Ser Leu Val Lys Ile
            165             170                 175

Leu Ala Arg Gly Phe Cys Leu His Ala Phe Thr Phe Leu Arg Asp Pro
        180             185                 190

Trp Asn Trp Leu Asp Phe Ser Val Ile Ile Met Ala Tyr Thr Thr Glu
        195             200                 205

Phe Val Asp Leu Gly Asn Val Ser Ala Leu Arg Thr Phe Arg Val Leu
    210             215                 220

Arg Ala Leu Lys Thr Ile Ser Val Ile Ser Gly Leu Lys Thr Ile Val
225             230             235                     240

Gly Ala Leu Ile Gln Ser Val Lys Lys Leu Ala Asp Val Met Val Leu
            245             250                 255

Thr Val Phe Cys Leu Ser Val Phe Ala Leu Ile Gly Leu Gln Leu Phe
        260             265                 270
```

```
Met Gly Asn Leu Arg His Lys Cys Val Arg Asn Phe Thr Ala Leu Asn
        275                 280                 285

Gly Thr Asn Gly Ser Val Glu Ala Asp Gly Leu Val Trp Glu Ser Leu
        290                 295                 300

Asp Leu Tyr Leu Ser Asp Pro Glu Asn Tyr Leu Leu Lys Asn Gly Thr
305                 310                 315                 320

Ser Asp Val Leu Leu Cys Gly Asn Ser Ser Asp Ala Gly Thr Cys Pro
                325                 330                 335

Glu Gly Tyr Arg Cys Leu Lys Ala Gly Glu Asn Pro Asp His Gly Tyr
            340                 345                 350

Thr Ser Phe Asp Ser Phe Ala Trp Ala Phe Leu Ala Leu Phe Arg Leu
        355                 360                 365

Met Thr Gln Asp Cys Trp Glu Arg Leu Tyr Gln Gln Thr Leu Arg Ser
    370                 375                 380

Ala Gly Lys Ile Tyr Met Ile Phe Phe Met Leu Val Ile Phe Leu Gly
385                 390                 395                 400

Ser Phe Tyr Leu Val Asn Leu Ile Leu Ala Val Val Ala Met Ala Tyr
                405                 410                 415

Glu Glu Gln Asn Gln Ala Thr Ile Ala Glu Thr Glu Glu Lys Glu Lys
            420                 425                 430

Arg Phe Gln Glu Ala Met Glu Met Leu Lys Lys Glu His Glu Ala Leu
        435                 440                 445

Thr Ile Arg Gly Val Asp Thr Val Ser Arg Ser Ser Leu Glu Met Ser
    450                 455                 460

Pro Leu Ala Pro Val Asn Ser His Glu Arg Arg Ser Lys Arg Arg Lys
465                 470                 475                 480

Arg Met Ser Ser Gly Thr Glu Glu Cys Gly Glu Asp Arg Leu Pro Lys
                485                 490                 495

Ser Asp Ser Glu Asp Gly Pro Arg Ala Met Asn His Leu Ser Leu Thr
            500                 505                 510

Arg Gly Leu Ser Arg Thr Ser Met Lys Pro Arg Ser Ser Arg Gly Ser
```

```
                515                      520                      525

Ile Phe Thr Phe Arg Arg Arg Asp Leu Gly Ser Glu Ala Asp Phe Ala
    530                 535                 540


Asp Asp Glu Asn Ser Thr Ala Gly Glu Ser Glu Ser His His Thr Ser
545                 550                 555                 560


Leu Leu Val Pro Trp Pro Leu Arg Arg Thr Ser Ala Gln Gly Gln Pro
                565                 570                 575


Ser Pro Gly Thr Ser Ala Pro Gly His Ala Leu His Gly Lys Lys Asn
                580                 585                 590


Ser Thr Val Asp Cys Asn Gly Val Val Ser Leu Leu Gly Ala Gly Asp
            595                 600                 605


Pro Glu Ala Thr Ser Pro Gly Ser His Leu Leu Arg Pro Val Met Leu
    610                 615                 620


Glu His Pro Pro Asp Thr Thr Thr Pro Ser Glu Glu Pro Gly Gly Pro
625                 630                 635                 640


Gln Met Leu Thr Ser Gln Ala Pro Cys Val Asp Gly Phe Glu Glu Pro
                645                 650                 655


Gly Ala Arg Gln Arg Ala Leu Ser Ala Val Ser Val Leu Thr Ser Ala
                660                 665                 670


Leu Glu Glu Leu Glu Glu Ser Arg His Lys Cys Pro Pro Cys Trp Asn
    675                 680                 685


Arg Leu Ala Gln Arg Tyr Leu Ile Trp Glu Cys Cys Pro Leu Trp Met
    690                 695                 700


Ser Ile Lys Gln Gly Val Lys Leu Val Val Met Asp Pro Phe Thr Asp
705                 710                 715                 720


Leu Thr Ile Thr Met Cys Ile Val Leu Asn Thr Leu Phe Met Ala Leu
                725                 730                 735


Glu His Tyr Asn Met Thr Ser Glu Phe Glu Glu Met Leu Gln Val Gly
            740                 745                 750


Asn Leu Val Phe Thr Gly Ile Phe Thr Ala Glu Met Thr Phe Lys Ile
            755                 760                 765
```

```
Ile Ala Leu Asp Pro Tyr Tyr Tyr Phe Gln Gln Gly Trp Asn Ile Phe
    770             775             780

Asp Ser Ile Ile Val Ile Leu Ser Leu Met Glu Leu Gly Leu Ser Arg
785             790             795             800

Met Ser Asn Leu Ser Val Leu Arg Ser Phe Arg Leu Leu Arg Val Phe
                805             810             815

Lys Leu Ala Lys Ser Trp Pro Thr Leu Asn Thr Leu Ile Lys Ile Ile
            820             825             830

Gly Asn Ser Val Gly Ala Leu Gly Asn Leu Thr Leu Val Leu Ala Ile
            835             840             845

Ile Val Phe Ile Phe Ala Val Val Gly Met Gln Leu Phe Gly Lys Asn
    850             855             860

Tyr Ser Glu Leu Arg Asp Ser Asp Ser Gly Leu Leu Pro Arg Trp His
865             870             875             880

Met Met Asp Phe Phe His Ala Phe Leu Ile Ile Phe Arg Ile Leu Cys
            885             890             895

Gly Glu Trp Ile Glu Thr Met Trp Asp Cys Met Glu Val Ser Gly Gln
            900             905             910

Ser Leu Cys Leu Leu Val Phe Leu Leu Val Met Val Ile Gly Asn Leu
            915             920             925

Val Val Leu Asn Leu Phe Leu Ala Leu Leu Leu Ser Ser Phe Ser Ala
    930             935             940

Asp Asn Leu Thr Ala Pro Asp Glu Asp Arg Glu Met Asn Asn Leu Gln
945             950             955             960

Leu Ala Leu Ala Arg Ile Gln Arg Gly Leu Arg Phe Val Lys Arg Thr
            965             970             975

Thr Trp Asp Phe Cys Cys Gly Leu Leu Arg Gln Arg Pro Gln Lys Pro
            980             985             990

Ala Ala Leu Ala Ala Gln Gly Gln Leu Pro Ser Cys Ile Ala Thr Pro
            995             1000            1005

Tyr Ser Pro Pro Pro Pro Glu Thr Glu Lys Val Pro Pro Thr Arg
    1010            1015            1020
```

```
Lys Glu   Thr Arg Phe Glu Glu   Gly Glu Gln Pro   Gly   Gln Gly Thr
    1025                  1030                  1035

Pro Gly   Asp Pro Glu Pro Val   Cys Val Pro Ile   Ala   Val Ala Glu
    1040                  1045                  1050

Ser Asp   Thr Asp Asp Gln Glu   Glu Asp Glu Glu   Asn   Ser Leu Gly
    1055                  1060                  1065

Thr Glu   Glu Glu Ser Ser Lys   Gln Glu Ser Gln   Pro   Val Ser Gly
    1070                  1075                  1080

Gly Pro   Glu Ala Pro Pro Asp   Ser Arg Thr Trp   Ser   Gln Val Ser
    1085                  1090                  1095

Ala Thr   Ala Ser Ser Glu Ala   Glu Ala Ser Ala   Ser   Gln Ala Asp
    1100                  1105                  1110

Trp Arg   Gln Gln Trp Lys Ala   Glu Pro Gln Ala   Pro   Gly Cys Gly
    1115                  1120                  1125

Glu Thr   Pro Glu Asp Ser Cys   Ser Glu Gly Ser   Thr   Ala Asp Met
    1130                  1135                  1140

Thr Asn   Thr Ala Glu Leu Leu   Glu Gln Ile Pro   Asp   Leu Gly Gln
    1145                  1150                  1155

Asp Val   Lys Asp Pro Glu Asp   Cys Phe Thr Glu   Gly   Cys Val Arg
    1160                  1165                  1170

Arg Cys   Pro Cys Cys Ala Val   Asp Thr Thr Gln   Ala   Pro Gly Lys
    1175                  1180                  1185

Val Trp   Trp Arg Leu Arg Lys   Thr Cys Tyr His   Ile   Val Glu His
    1190                  1195                  1200

Ser Trp   Phe Glu Thr Phe Ile   Ile Phe Met Ile   Leu   Leu Ser Ser
    1205                  1210                  1215

Gly Ala   Leu Ala Phe Glu Asp   Ile Tyr Leu Glu   Glu   Arg Lys Thr
    1220                  1225                  1230

Ile Lys   Val Leu Leu Glu Tyr   Ala Asp Lys Met   Phe   Thr Tyr Val
    1235                  1240                  1245

Phe Val   Leu Glu Met Leu Leu   Lys Trp Val Ala   Tyr   Gly Phe Lys
    1250                  1255                  1260
```

```
Lys Tyr Phe Thr Asn Ala Trp   Cys Trp Leu Asp Phe   Leu Ile Val
    1265                1270                1275

Asp Val Ser Leu Val Ser Leu   Val Ala Asn Thr Leu   Gly Phe Ala
    1280                1285                1290

Glu Met Gly Pro Ile Lys Ser   Leu Arg Thr Leu Arg   Ala Leu Arg
    1295                1300                1305

Pro Leu Arg Ala Leu Ser Arg   Phe Glu Gly Met Arg   Val Val Val
    1310                1315                1320

Asn Ala Leu Val Gly Ala Ile   Pro Ser Ile Met Asn   Val Leu Leu
    1325                1330                1335

Val Cys Leu Ile Phe Trp Leu   Ile Phe Ser Ile Met   Gly Val Asn
    1340                1345                1350

Leu Phe Ala Gly Lys Phe Gly   Arg Cys Ile Asn Gln   Thr Glu Gly
    1355                1360                1365

Asp Leu Pro Leu Asn Tyr Thr   Ile Val Asn Asn Lys   Ser Gln Cys
    1370                1375                1380

Glu Ser Leu Asn Leu Thr Gly   Glu Leu Tyr Trp Thr   Lys Val Lys
    1385                1390                1395

Val Asn Phe Asp Asn Val Gly   Ala Gly Tyr Leu Ala   Leu Leu Gln
    1400                1405                1410

Val Ala Thr Phe Lys Gly Trp   Met Asp Ile Met Tyr   Ala Ala Val
    1415                1420                1425

Asp Ser Arg Gly Tyr Glu Glu   Gln Pro Gln Trp Glu   Tyr Asn Leu
    1430                1435                1440

Tyr Met Tyr Ile Tyr Phe Val   Ile Phe Ile Ile Phe   Gly Ser Phe
    1445                1450                1455

Phe Thr Leu Asn Leu Phe Ile   Gly Val Ile Ile Asp   Asn Phe Asn
    1460                1465                1470

Gln Gln Lys Lys Lys Leu Gly   Gly Gln Asp Ile Phe   Met Thr Glu
    1475                1480                1485

Glu Gln Lys Lys Tyr Tyr Asn   Ala Met Lys Lys Leu   Gly Ser Lys
```

```
              1490                    1495                   1500
                                                        .

        Lys Pro Gln Lys Pro Ile Pro Arg Pro Leu Asn Lys Tyr Gln Gly
            1505              1510              1515


   .    Phe Ile Phe Asp Ile Val Thr Lys Gln Ala Phe Asp Val Thr Ile
            1520              1525              1530


        Met Phe Leu Ile Cys Leu Asn Met Val Thr Met Met Val Glu Thr
            1535              1540              1545


        Asp Asp Gln Ser Pro Glu Lys Ile Asn Ile Leu Ala Lys Ile Asn
            1550              1555              1560


        Leu Leu Phe Val Ala Ile Phe Thr Gly Glu Cys Ile Val Lys Leu
            1565              1570              1575


        Ala Ala Leu Arg His Tyr Tyr Phe Thr Asn Ser Trp Asn Ile Phe
            1580              1585              1590                        .


        Asp Phe Val Val Val Ile Leu Ser Ile Val Gly Thr Val Leu Ser
            1595              1600              1605


        Asp Ile Ile Gln Lys Tyr Phe Phe Ser Pro Thr Leu Phe Arg Val
            1610              1615              1620


        Ile Arg Leu Ala Arg Ile Gly Arg Ile Leu Arg Leu Ile Arg Gly
            1625              1630              1635


        Ala Lys Gly Ile Arg Thr Leu Leu Phe Ala Leu Met Met Ser Leu
            1640              1645              1650


        Pro Ala Leu Phe Asn Ile Gly Leu Leu Leu Phe Leu Val Met Phe
            1655              1660              1665


        Ile Tyr Ser Ile Phe Gly Met Ala Asn Phe Ala Tyr Val Lys Trp
            1670              1675              1680


        Glu Ala Gly Ile Asp Asp Met Phe Asn Phe Gln Thr Phe Ala Asn
            1685              1690              1695


        Ser Met Leu Cys Leu Phe Gln Ile Thr Thr Ser Ala Gly Trp Asp
            1700              1705              1710


   .    Gly Leu Leu Ser Pro Ile Leu Asn Thr Gly Pro Pro Tyr Cys Asp
            1715              1720              1725
```

```
Pro Thr  Leu Pro Asn Ser Asn  Gly Ser Arg Gly Asp  Cys Gly Ser
    1730             1735              1740

Pro Ala  Val Gly Ile Leu Phe  Phe Thr Thr Tyr Ile  Ile Ile Ser
    1745             1750              1755

Phe Leu  Ile Val Val Asn Met  Tyr Ile Ala Ile Ile  Leu Glu Asn
    1760             1765              1770

Phe Ser  Val Ala Thr Glu Glu  Ser Thr Glu Pro Leu  Ser Glu Asp
    1775             1780              1785

Asp Phe  Asp Met Phe Tyr Glu  Ile Trp Glu Lys Phe  Asp Pro Glu
    1790             1795              1800

Ala Thr  Gln Phe Ile Glu Tyr  Ser Val Leu Ser Asp  Phe Ala Asp
    1805             1810              1815

Ala Leu  Ser Glu Pro Leu Arg  Ile Ala Lys Pro Asn  Gln Ile Ser
    1820             1825              1830

Leu Ile  Asn Met Asp Leu Pro  Met Val Ser Gly Asp  Arg Ile His
    1835             1840              1845

Cys Met  Asp Ile Leu Phe Ala  Phe Thr Lys Arg Val  Leu Gly Glu
    1850             1855              1860

Ser Gly  Glu Met Asp Ala Leu  Lys Ile Gln Met Glu  Glu Lys Phe
    1865             1870              1875

Met Ala  Ala Asn Pro Ser Lys  Ile Ser Tyr Glu Pro  Ile Thr Thr
    1880             1885              1890

Thr Leu  Arg Arg Lys His Glu  Glu Val Ser Ala Met  Val Ile Gln
    1895             1900              1905

Arg Ala  Phe Arg Arg His Leu  Leu Gln Arg Ser Leu  Lys His Ala
    1910             1915              1920

Ser Phe  Leu Phe Arg Gln Gln  Ala Gly Ser Gly Leu  Ser Glu Glu
    1925             1930              1935

Asp Ala  Pro Glu Arg Glu Gly  Leu Ile Ala Tyr Val  Met Ser Glu
    1940             1945              1950

Asn Phe  Ser Arg Pro Leu Gly  Pro Pro Ser Ser Ser  Ser Ile Ser
    1955             1960              1965
```

```
Ser Thr   Ser Phe Pro Pro Ser   Tyr Asp Ser Val Thr   Arg Ala Thr
    1970                1975                1980


Ser Asp   Asn Leu Gln Val Arg   Gly Ser Asp Tyr Ser   His Ser Glu
    1985                1990                1995


Asp Leu   Ala Asp Phe Pro Pro   Ser Pro Asp Arg Asp   Arg Glu Ser
    2000                2005                2010


Ile Val
    2015
```

<210> 7
<211> 6169
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(6045)

<400> 7
```
atg gca aac ttc cta tta cct agg ggc acc agc agc ttc cgc agg ttc      48
Met Ala Asn Phe Leu Leu Pro Arg Gly Thr Ser Ser Phe Arg Arg Phe
1               5                   10                  15

aca cgg gag tcc ctg gca gcc atc gag aag cgc atg gcg gag aag caa      96
Thr Arg Glu Ser Leu Ala Ala Ile Glu Lys Arg Met Ala Glu Lys Gln
                20                  25                  30

gcc cgc ggc tca acc acc ttg cag gag agc cga gag ggg ctg ccc gag     144
Ala Arg Gly Ser Thr Thr Leu Gln Glu Ser Arg Glu Gly Leu Pro Glu
            35                  40                  45

gag gag gct ccc cgg ccc cag ctg gac ctg cag gcc tcc aaa aag ctg     192
Glu Glu Ala Pro Arg Pro Gln Leu Asp Leu Gln Ala Ser Lys Lys Leu
    50                  55                  60

cca gat ctc tat ggc aat cca ccc caa gag ctc atc gga gag ccc ctg     240
Pro Asp Leu Tyr Gly Asn Pro Pro Gln Glu Leu Ile Gly Glu Pro Leu
65                  70                  75                  80

gag gac ctg gac ccc ttc tat agc acc caa aag act ttc atc gta ctg     288
Glu Asp Leu Asp Pro Phe Tyr Ser Thr Gln Lys Thr Phe Ile Val Leu
                85                  90                  95

aat aaa ggc aag acc atc ttc cgg ttc agt gcc acc aac gcc ttg tat     336
Asn Lys Gly Lys Thr Ile Phe Arg Phe Ser Ala Thr Asn Ala Leu Tyr
                100                 105                 110

gtc ctc agt ccc ttc cac ccc atc cgg aga gcg gct gtg aag att ctg     384
Val Leu Ser Pro Phe His Pro Ile Arg Arg Ala Ala Val Lys Ile Leu
            115                 120                 125

gtt cac tcg ctc ttc aac atg ctc atc atg tgc acc atc ctc acc aac     432
Val His Ser Leu Phe Asn Met Leu Ile Met Cys Thr Ile Leu Thr Asn
        130                 135                 140
```

```
tgc gtg ttc atg gcc cag cac gac cct cca ccc tgg acc aag tat gtc        480
Cys Val Phe Met Ala Gln His Asp Pro Pro Pro Trp Thr Lys Tyr Val
145                 150                 155                 160

gag tac acc ttc acc gcc att tac acc ttt gag tct ctg gtc aag att        528
Glu Tyr Thr Phe Thr Ala Ile Tyr Thr Phe Glu Ser Leu Val Lys Ile
                    165                 170                 175

ctg gct cga ggc ttc tgc ctg cac gcg ttc act ttc ctt cgg gac cca        576
Leu Ala Arg Gly Phe Cys Leu His Ala Phe Thr Phe Leu Arg Asp Pro
                180                 185                 190

tgg aac tgg ctg gac ttt agt gtg att atc atg gca tac aca act gaa        624
Trp Asn Trp Leu Asp Phe Ser Val Ile Ile Met Ala Tyr Thr Thr Glu
                195                 200                 205

ttt gtg gac ctg ggc aat gtc tca gcc tta cgc acc ttc cga gtc ctc        672
Phe Val Asp Leu Gly Asn Val Ser Ala Leu Arg Thr Phe Arg Val Leu
        210                 215                 220

cgg gcc ctg aaa act ata tca gtc att tca ggg ctg aag acc atc gtg        720
Arg Ala Leu Lys Thr Ile Ser Val Ile Ser Gly Leu Lys Thr Ile Val
225                 230                 235                 240

ggg gcc ctg atc cag tct gtg aag aag ctg gct gat gtg atg gtc ctc        768
Gly Ala Leu Ile Gln Ser Val Lys Lys Leu Ala Asp Val Met Val Leu
                    245                 250                 255

aca gtc ttc tgc ctc agc gtc ttt gcc ctc atc ggc ctg cag ctc ttc        816
Thr Val Phe Cys Leu Ser Val Phe Ala Leu Ile Gly Leu Gln Leu Phe
                260                 265                 270

atg ggc aac cta agg cac aag tgc gtg cgc aac ttc aca gcg ctc aac        864
Met Gly Asn Leu Arg His Lys Cys Val Arg Asn Phe Thr Ala Leu Asn
                275                 280                 285

ggc acc aac ggc tcc gtg gag gcc gac ggc ttg gtc tgg gaa tcc ctg        912
Gly Thr Asn Gly Ser Val Glu Ala Asp Gly Leu Val Trp Glu Ser Leu
                290                 295                 300

gac ctt tac ctc agt gat cca gaa aat tac ctg ctc aag aac ggc acc        960
Asp Leu Tyr Leu Ser Asp Pro Glu Asn Tyr Leu Leu Lys Asn Gly Thr
305                 310                 315                 320

tct gat gtg tta ctg tgt ggg aac agc tct gac gct ggg aca tgt ccg       1008
Ser Asp Val Leu Leu Cys Gly Asn Ser Ser Asp Ala Gly Thr Cys Pro
                325                 330                 335

gag ggc tac cgg tgc cta aag gca ggc gag aac ccc gac cac ggc tac       1056
Glu Gly Tyr Arg Cys Leu Lys Ala Gly Glu Asn Pro Asp His Gly Tyr
                340                 345                 350

acc agc ttc gat tcc ttt gcc tgg gcc ttt ctt gca ctc ttc cgc ctg       1104
Thr Ser Phe Asp Ser Phe Ala Trp Ala Phe Leu Ala Leu Phe Arg Leu
                355                 360                 365

atg acg cag gac tgc tgg gag cgc ctc tat cag cag acc ctc agg tcc       1152
Met Thr Gln Asp Cys Trp Glu Arg Leu Tyr Gln Gln Thr Leu Arg Ser
370                 375                 380

gca ggg aag atc tac atg atc ttc ttc atg ctt gtc atc ttc ctg ggg       1200
Ala Gly Lys Ile Tyr Met Ile Phe Phe Met Leu Val Ile Phe Leu Gly
```

```
385                    390                    395                    400

tcc ttc tac ctg gtg aac ctg atc ctg gcc gtg gtc gca atg gcc tat        1248
Ser Phe Tyr Leu Val Asn Leu Ile Leu Ala Val Val Ala Met Ala Tyr
                405                    410                    415

gag gag caa aac caa gcc acc atc gct gag acc gag gag aag gaa aag        1296
Glu Glu Gln Asn Gln Ala Thr Ile Ala Glu Thr Glu Glu Lys Glu Lys
                420                    425                    430

cgc ttc cag gag gcc atg gaa atg ctc aag aaa gaa cac gag gcc ctc        1344
Arg Phe Gln Glu Ala Met Glu Met Leu Lys Lys Glu His Glu Ala Leu
                435                    440                    445

acc atc agg ggt gtg gat acc gtg tcc cgt agc tcc ttg gag atg tcc        1392
Thr Ile Arg Gly Val Asp Thr Val Ser Arg Ser Ser Leu Glu Met Ser
                450                    455                    460

cct ttg gcc cca gta aac agc cat gag aga aga agc aag agg aga aaa        1440
Pro Leu Ala Pro Val Asn Ser His Glu Arg Arg Ser Lys Arg Arg Lys
465                    470                    475                    480

cgg atg tct tca gga act gag gag tgt ggg gag gac agg ctc ccc aag        1488
Arg Met Ser Ser Gly Thr Glu Glu Cys Gly Glu Asp Arg Leu Pro Lys
                485                    490                    495

tct gac tca gaa gat ggt ccc aga gca atg aat cat ctc agc ctc acc        1536
Ser Asp Ser Glu Asp Gly Pro Arg Ala Met Asn His Leu Ser Leu Thr
                500                    505                    510

cgt ggc ctc agc agg act tct atg aag cca cgt tcc agc cgc ggg agc        1584
Arg Gly Leu Ser Arg Thr Ser Met Lys Pro Arg Ser Ser Arg Gly Ser
                515                    520                    525

att ttc acc ttt cgc agg cga gac ctg ggt tct gaa gca gat ttt gca        1632
Ile Phe Thr Phe Arg Arg Arg Asp Leu Gly Ser Glu Ala Asp Phe Ala
                530                    535                    540

gat gat gaa aac agc aca gcg ggg gag agc gag agc cac cgc aca tca        1680
Asp Asp Glu Asn Ser Thr Ala Gly Glu Ser Glu Ser His Arg Thr Ser
545                    550                    555                    560

ctg ctg gtg ccc tgg ccc ctg cgc cgg acc agt gcc cag gga cag ccc        1728
Leu Leu Val Pro Trp Pro Leu Arg Arg Thr Ser Ala Gln Gly Gln Pro
                565                    570                    575

agt ccc gga acc tcg gct cct ggc cac gcc ctc cat ggc aaa aag aac        1776
Ser Pro Gly Thr Ser Ala Pro Gly His Ala Leu His Gly Lys Lys Asn
                580                    585                    590

agc act gtg gac tgc aat ggg gtg gtc tca tta ctg ggg gca ggc gac        1824
Ser Thr Val Asp Cys Asn Gly Val Val Ser Leu Leu Gly Ala Gly Asp
                595                    600                    605

cca gag gcc aca tcc cca gga agc cac ctc ctc cgc cct gtg atg cta        1872
Pro Glu Ala Thr Ser Pro Gly Ser His Leu Leu Arg Pro Val Met Leu
                610                    615                    620

gag cac ccg cca gac acg acc acg cca tcg gag gag cca ggc ggg ccc        1920
Glu His Pro Pro Asp Thr Thr Thr Pro Ser Glu Glu Pro Gly Gly Pro
625                    630                    635                    640

cag atg ctg acc tcc cag gct ccg tgt gta gat ggc ttc gag gag cca        1968
```

```
Gln Met Leu Thr Ser Gln Ala Pro Cys Val Asp Gly Phe Glu Glu Pro
                645                 650                 655

gga gca cgg cag cgg gcc ctc agc gca gtc agc gtc ctc acc agc gca        2016
Gly Ala Arg Gln Arg Ala Leu Ser Ala Val Ser Val Leu Thr Ser Ala
                660                 665                 670

ctg gaa gag tta gag gag tct cgc cac aag tgt cca cca tgc tgg aac        2064
Leu Glu Glu Leu Glu Glu Ser Arg His Lys Cys Pro Pro Cys Trp Asn
                675                 680                 685

cgt ctc gcc cag cgc tac ctg atc tgg gag tgc tgc ccg ctg tgg atg        2112
Arg Leu Ala Gln Arg Tyr Leu Ile Trp Glu Cys Cys Pro Leu Trp Met
                690                 695                 700

tcc atc aag cag gga gtg aag ttg gtg gtc atg gac ccg ttt act gac        2160
Ser Ile Lys Gln Gly Val Lys Leu Val Val Met Asp Pro Phe Thr Asp
705                 710                 715                 720

ctc acc atc act atg tgc atc gta ctc aac aca ctc ttc atg gcg ctg        2208
Leu Thr Ile Thr Met Cys Ile Val Leu Asn Thr Leu Phe Met Ala Leu
                725                 730                 735

gag cac tac aac atg aca agt gaa ttc gag gag atg ctg cag gtc gga        2256
Glu His Tyr Asn Met Thr Ser Glu Phe Glu Glu Met Leu Gln Val Gly
                740                 745                 750

aac ctg gtc ttc aca ggg att ttc aca gca gag atg acc ttc aag atc        2304
Asn Leu Val Phe Thr Gly Ile Phe Thr Ala Glu Met Thr Phe Lys Ile
                755                 760                 765

att gcc ctc gac ccc tac tac tac ttc caa cag ggc tgg aac atc ttc        2352
Ile Ala Leu Asp Pro Tyr Tyr Tyr Phe Gln Gln Gly Trp Asn Ile Phe
770                 775                 780

gac agc atc atc gtc atc ctt agc ctc atg gag ctg ggc ctg tcc cgc        2400
Asp Ser Ile Ile Val Ile Leu Ser Leu Met Glu Leu Gly Leu Ser Arg
785                 790                 795                 800

atg agc aac ttg tcg gtg ctg cgc tcc ttc cgc ctg ctg cgg gtc ttc        2448
Met Ser Asn Leu Ser Val Leu Arg Ser Phe Arg Leu Leu Arg Val Phe
                805                 810                 815

aag ctg gcc aaa tca tgg ccc acc ctg aac aca ctc atc aag atc atc        2496
Lys Leu Ala Lys Ser Trp Pro Thr Leu Asn Thr Leu Ile Lys Ile Ile
                820                 825                 830

ggg aac tca gtg ggg gca ctg ggg aac ctg aca ctg gtg cta gcc atc        2544
Gly Asn Ser Val Gly Ala Leu Gly Asn Leu Thr Leu Val Leu Ala Ile
                835                 840                 845

atc gtg ttc atc ttt gct gtg gtg ggc atg cag ctc ttt ggc aag aac        2592
Ile Val Phe Ile Phe Ala Val Val Gly Met Gln Leu Phe Gly Lys Asn
                850                 855                 860

tac tcg gag ctg agg gac agc gac tca ggc ctg ctg cct cgc tgg cac        2640
Tyr Ser Glu Leu Arg Asp Ser Asp Ser Gly Leu Leu Pro Arg Trp His
865                 870                 875                 880

atg atg gac ttc ttt cat gcc ttc ctc atc atc ttc cgc atc ctc tgt        2688
Met Met Asp Phe Phe His Ala Phe Leu Ile Ile Phe Arg Ile Leu Cys
                885                 890                 895
```

```
gga gag tgg atc gag acc atg tgg gac tgc atg gag gtg tcg ggg cag        2736
Gly Glu Trp Ile Glu Thr Met Trp Asp Cys Met Glu Val Ser Gly Gln
            900                 905                 910

tca tta tgc ctg ctg gtc ttc ttg ctt gtt atg gtc att ggc aac ctt        2784
Ser Leu Cys Leu Leu Val Phe Leu Leu Val Met Val Ile Gly Asn Leu
            915                 920                 925

gtg gtc ctg aat ctc ttc ctg gcc ttg ctg ctc agc tcc ttc agt gca        2832
Val Val Leu Asn Leu Phe Leu Ala Leu Leu Leu Ser Ser Phe Ser Ala
            930                 935                 940

gac aac ctc aca gcc cct gat gag gac aga gag atg aac aac ctc cag        2880
Asp Asn Leu Thr Ala Pro Asp Glu Asp Arg Glu Met Asn Asn Leu Gln
945                 950                 955                 960

ctg gcc ctg gcc cgc atc cag agg ggc ctg cgc ttt gtc aag cgg acc        2928
Leu Ala Leu Ala Arg Ile Gln Arg Gly Leu Arg Phe Val Lys Arg Thr
            965                 970                 975

acc tgg gat ttc tgc tgt ggt ctc ctg cgg cag cgg cct cag aag ccc        2976
Thr Trp Asp Phe Cys Cys Gly Leu Leu Arg Gln Arg Pro Gln Lys Pro
            980                 985                 990

gca gcc ctt gcc gcc cag ggc cag  ctg ccc agc tgc att  gcc acc ccc       3024
Ala Ala Leu Ala Ala Gln Gly Gln  Leu Pro Ser Cys Ile  Ala Thr Pro
            995                 1000                1005

tac tcc  ccg cca ccc cca gag  acg gag aag gtg cct  ccc acc cgc          3069
Tyr Ser  Pro Pro Pro Pro Glu  Thr Glu Lys Val Pro  Pro Thr Arg
        1010                1015                1020

aag gaa  aca cgg ttt gag gaa  ggc gag caa cca ggc  cag ggc acc          3114
Lys Glu  Thr Arg Phe Glu Glu  Gly Glu Gln Pro Gly  Gln Gly Thr
        1025                1030                1035

ccc ggg  gat cca gag ccc gtg  tgt gtg ccc atc gct  gtg gcc gag          3159
Pro Gly  Asp Pro Glu Pro Val  Cys Val Pro Ile Ala  Val Ala Glu
        1040                1045                1050

tca gac  aca gat gac caa gaa  gaa gat gag gag aac  agc ctg ggc          3204
Ser Asp  Thr Asp Asp Gln Glu  Glu Asp Glu Glu Asn  Ser Leu Gly
        1055                1060                1065

acg gag  gag gag tcc agc aag  cag gaa tcc cag cct  gtg tcc ggt          3249
Thr Glu  Glu Glu Ser Ser Lys  Gln Glu Ser Gln Pro  Val Ser Gly
        1070                1075                1080

ggc cca  gag gcc cct ccg gat  tcc agg acc tgg agc  cag gtg tca          3294
Gly Pro  Glu Ala Pro Pro Asp  Ser Arg Thr Trp Ser  Gln Val Ser
        1085                1090                1095

gcg act  gcc tcc tct gag gcc  gag gcc agt gca tct  cag gcc gac          3339
Ala Thr  Ala Ser Ser Glu Ala  Glu Ala Ser Ala Ser  Gln Ala Asp
        1100                1105                1110

tgg cgg  cag cag tgg aaa gcg  gaa ccc cag gcc cca  ggg tgc ggt          3384
Trp Arg  Gln Gln Trp Lys Ala  Glu Pro Gln Ala Pro  Gly Cys Gly
        1115                1120                1125

gag acc  cca gag gac agt tgc  tcc gag ggc agc aca  gca gac atg          3429
Glu Thr  Pro Glu Asp Ser Cys  Ser Glu Gly Ser Thr  Ala Asp Met
        1130                1135                1140
```

```
acc aac  acc gct gag ctc ctg  gag cag atc cct gac  ctc ggc cag        3474
Thr Asn  Thr Ala Glu Leu Leu  Glu Gln Ile Pro Asp  Leu Gly Gln
    1145                1150                 1155

gat gtc  aag gac cca gag gac  tgc ttc act gaa ggc  tgt gtc cgg        3519
Asp Val  Lys Asp Pro Glu Asp  Cys Phe Thr Glu Gly  Cys Val Arg
    1160                1165                 1170

cgc tgt  ccc tgc tgt gcg gtg  gac acc aca cag gcc  cca ggg aag        3564
Arg Cys  Pro Cys Cys Ala Val  Asp Thr Thr Gln Ala  Pro Gly Lys
    1175                1180                 1185

gtc tgg  tgg cgg ttg cgc aag  acc tgc tac cac atc  gtg gag cac        3609
Val Trp  Trp Arg Leu Arg Lys  Thr Cys Tyr His Ile  Val Glu His
    1190                1195                 1200

agc tgg  ttc gag aca ttc atc  atc ttc atg atc cta  ctc agc agt        3654
Ser Trp  Phe Glu Thr Phe Ile  Ile Phe Met Ile Leu  Leu Ser Ser
    1205                1210                 1215

gga gcg  ctg gcc ttc gag gac  atc tac cta gag gag  cgg aag acc        3699
Gly Ala  Leu Ala Phe Glu Asp  Ile Tyr Leu Glu Glu  Arg Lys Thr
    1220                1225                 1230

atc aag  gtt ctg ctt gag tat  gcc gac aag atg ttc  aca tat gtc        3744
Ile Lys  Val Leu Leu Glu Tyr  Ala Asp Lys Met Phe  Thr Tyr Val
    1235                1240                 1245

ttc gtg  ctg gag atg ctg ctc  aag tgg gtg gcc tac  ggc ttc aag        3789
Phe Val  Leu Glu Met Leu Leu  Lys Trp Val Ala Tyr  Gly Phe Lys
    1250                1255                 1260

aag tac  ttc acc aat gcc tgg  tgc tgg ctc gac ttc  ctc atc gta        3834
Lys Tyr  Phe Thr Asn Ala Trp  Cys Trp Leu Asp Phe  Leu Ile Val
    1265                1270                 1275

gac gtc  tct ctg gtc agc ctg  gtg gcc aac acc ctg  ggc ttt gcc        3879
Asp Val  Ser Leu Val Ser Leu  Val Ala Asn Thr Leu  Gly Phe Ala
    1280                1285                 1290

gag atg  ggt ccc atc aag tca  ctg cgg acg ctg cgt  gca ctc cgt        3924
Glu Met  Gly Pro Ile Lys Ser  Leu Arg Thr Leu Arg  Ala Leu Arg
    1295                1300                 1305

cct ctg  aga gct ctg tca cga  ttt gag ggc atg agg  gtg gtg gtc        3969
Pro Leu  Arg Ala Leu Ser Arg  Phe Glu Gly Met Arg  Val Val Val
    1310                1315                 1320

aat gcc  ctg gtg ggc gcc atc  ccg tcc atc atg aac  gtc ctc ctc        4014
Asn Ala  Leu Val Gly Ala Ile  Pro Ser Ile Met Asn  Val Leu Leu
    1325                1330                 1335

gtc tgc  ctc atc ttc tgg ctc  atc ttc agc atc atg  ggc gtg aac        4059
Val Cys  Leu Ile Phe Trp Leu  Ile Phe Ser Ile Met  Gly Val Asn
    1340                1345                 1350

ctc ttt  gcg ggg aag ttt ggg  agg tgc atc aac cag  aca gag gga        4104
Leu Phe  Ala Gly Lys Phe Gly  Arg Cys Ile Asn Gln  Thr Glu Gly
    1355                1360                 1365

gac ttg  cct ttg aac tac acc  atc gtg aac aac aag  agc cag tgt        4149
Asp Leu  Pro Leu Asn Tyr Thr  Ile Val Asn Asn Lys  Ser Gln Cys
```

```
        1370                    1375                    1380

gag tcc  ttg aac ttg acc gga  gaa ttg tac tgg acc  aag gtg aaa       4194
Glu Ser  Leu Asn Leu Thr Gly  Glu Leu Tyr Trp Thr  Lys Val Lys
        1385                    1390                    1395

gtc aac  ttt gac aac gtg ggg  gcc ggg tac ctg gcc  ctt ctg cag       4239
Val Asn  Phe Asp Asn Val Gly  Ala Gly Tyr Leu Ala  Leu Leu Gln
        1400                    1405                    1410

gtg gca  aca ttt aaa ggc tgg  atg gac att atg tat  gca gct gtg       4284
Val Ala  Thr Phe Lys Gly Trp  Met Asp Ile Met Tyr  Ala Ala Val
        1415                    1420                    1425

gac tcc  agg ggg tat gaa gag  cag cct cag tgg gaa  tac aac ctc       4329
Asp Ser  Arg Gly Tyr Glu Glu  Gln Pro Gln Trp Glu  Tyr Asn Leu
        1430                    1435                    1440

tac atg  tac atc tat ttt gtc  att ttc atc atc ttt  ggg tct ttc       4374
Tyr Met  Tyr Ile Tyr Phe Val  Ile Phe Ile Ile Phe  Gly Ser Phe
        1445                    1450                    1455

ttc acc  ctg aac ctc ttt att  ggt gtc atc att gac  aac ttc aac       4419
Phe Thr  Leu Asn Leu Phe Ile  Gly Val Ile Ile Asp  Asn Phe Asn
        1460                    1465                    1470

caa cag  aag aaa aag tta ggg  ggc cag gac atc ttc  atg aca gag       4464
Gln Gln  Lys Lys Lys Leu Gly  Gly Gln Asp Ile Phe  Met Thr Glu
        1475                    1480                    1485

gag cag  aag aag tac tac aat  gcc atg aag aag ctg  ggc tcc aag       4509
Glu Gln  Lys Lys Tyr Tyr Asn  Ala Met Lys Lys Leu  Gly Ser Lys
        1490                    1495                    1500

aag ccc  cag aag ccc atc cca  cgg ccc ctg aac aag  tac cag ggc       4554
Lys Pro  Gln Lys Pro Ile Pro  Arg Pro Leu Asn Lys  Tyr Gln Gly
        1505                    1510                    1515

ttc ata  ttc gac att gtg acc  aag cag gcc ttt gac  gtc acc atc       4599
Phe Ile  Phe Asp Ile Val Thr  Lys Gln Ala Phe Asp  Val Thr Ile
        1520                    1525                    1530

atg ttt  ctg atc tgc ttg aat  atg gtg acc atg atg  gtg gag aca       4644
Met Phe  Leu Ile Cys Leu Asn  Met Val Thr Met Met  Val Glu Thr
        1535                    1540                    1545

gat gac  caa agt cct gag aaa  atc aac atc ttg gcc  aag atc aac       4689
Asp Asp  Gln Ser Pro Glu Lys  Ile Asn Ile Leu Ala  Lys Ile Asn
        1550                    1555                    1560

ctg ctc  ttt gtg gcc atc ttc  aca ggc gag tgt att  gtc aag ctg       4734
Leu Leu  Phe Val Ala Ile Phe  Thr Gly Glu Cys Ile  Val Lys Leu
        1565                    1570                    1575

gct gcc  ctg cgc cac tac tac  ttc acc aac agc tgg  aat atc ttc       4779
Ala Ala  Leu Arg His Tyr Tyr  Phe Thr Asn Ser Trp  Asn Ile Phe
        1580                    1585                    1590

gac ttc  gtg gtt gtc atc ctc  tcc atc gtg ggc act  gtg ctc tcg       4824
Asp Phe  Val Val Val Ile Leu  Ser Ile Val Gly Thr  Val Leu Ser
        1595                    1600                    1605

gac atc  atc cag aag tac ttc  ttc tcc ccg acg ctc  ttc cga gtc       4869
```

```
Asp Ile  Ile Gln Lys Tyr Phe  Phe Ser Pro Thr Leu  Phe Arg Val
    1610               1615              1620

atc cgc  ctg gcc cga ata ggc  cgc atc ctc aga ctg  atc cga ggg        4914
Ile Arg  Leu Ala Arg Ile Gly  Arg Ile Leu Arg Leu  Ile Arg Gly
    1625               1630              1635

gcc aag  ggg atc cgc acg ctg  ctc ttt gcc ctc atg  atg tcc ctg        4959
Ala Lys  Gly Ile Arg Thr Leu  Leu Phe Ala Leu Met  Met Ser Leu
    1640               1645              1650

cct gcc  ctc ttc aac atc ggg  ctg ctg ctc ttc ctc  gtc atg ttc        5004
Pro Ala  Leu Phe Asn Ile Gly  Leu Leu Leu Phe Leu  Val Met Phe
    1655               1660              1665

atc tac  tcc atc ttt ggc atg  gcc aac ttc gct tat  gtc aag tgg        5049
Ile Tyr  Ser Ile Phe Gly Met  Ala Asn Phe Ala Tyr  Val Lys Trp
    1670               1675              1680

gag gct  ggc atc gac gac atg  ttc aac ttc cag acc  ttc gcc aac        5094
Glu Ala  Gly Ile Asp Asp Met  Phe Asn Phe Gln Thr  Phe Ala Asn
    1685               1690              1695

agc atg  ctg tgc ctc ttc cag  atc acc acg tcg gcc  ggc tgg gat        5139
Ser Met  Leu Cys Leu Phe Gln  Ile Thr Thr Ser Ala  Gly Trp Asp
    1700               1705              1710

ggc ctc  ctc agc ccc atc ctc  aac act ggg ccg ccc  tac tgc gac        5184
Gly Leu  Leu Ser Pro Ile Leu  Asn Thr Gly Pro Pro  Tyr Cys Asp
    1715               1720              1725

ccc act  ctg ccc aac agc aat  ggc tct cgg ggg gac  tgc ggg agc        5229
Pro Thr  Leu Pro Asn Ser Asn  Gly Ser Arg Gly Asp  Cys Gly Ser
    1730               1735              1740

cca gcc  gtg ggc atc ctc ttc  ttc acc acc tac atc  atc atc tcc        5274
Pro Ala  Val Gly Ile Leu Phe  Phe Thr Thr Tyr Ile  Ile Ile Ser
    1745               1750              1755

ttc ctc  atc gtg gtc aac atg  tac att gcc atc atc  ctg gag aac        5319
Phe Leu  Ile Val Val Asn Met  Tyr Ile Ala Ile Ile  Leu Glu Asn
    1760               1765              1770

ttc agc  gtg gcc acg gag gag  agc acc gag ccc ctg  agt gag gac        5364
Phe Ser  Val Ala Thr Glu Glu  Ser Thr Glu Pro Leu  Ser Glu Asp
    1775               1780              1785

gac ttc  gat atg ttc tat gag  atc tgg gag aaa ttt  gac cca gag        5409
Asp Phe  Asp Met Phe Tyr Glu  Ile Trp Glu Lys Phe  Asp Pro Glu
    1790               1795              1800

gcc act  cag ttt att gag tat  tcg gtc ctg tct gac  ttt gcc gat        5454
Ala Thr  Gln Phe Ile Glu Tyr  Ser Val Leu Ser Asp  Phe Ala Asp
    1805               1810              1815

gcc ctg  tct gag cca ctc cgt  atc gcc aag ccc aac  cag ata agc        5499
Ala Leu  Ser Glu Pro Leu Arg  Ile Ala Lys Pro Asn  Gln Ile Ser
    1820               1825              1830

ctc atc  aac atg gac ctg ccc  atg gtg agt ggg gac  cgc atc cat        5544
Leu Ile  Asn Met Asp Leu Pro  Met Val Ser Gly Asp  Arg Ile His
    1835               1840              1845
```

```
tgc atg gac att ctc ttt gcc  ttc acc aaa agg gtc  ctg ggg gag         5589
Cys Met Asp Ile Leu Phe Ala  Phe Thr Lys Arg Val  Leu Gly Glu
    1850                1855                 1860

tct ggg gag atg gac gcc ctg  aag atc cag atg gag  gag aag ttc         5634
Ser Gly Glu Met Asp Ala Leu  Lys Ile Gln Met Glu  Glu Lys Phe
    1865                1870                 1875

atg gca gcc aac cca tcc aag  atc tcc tac gag ccc  atc acc acc         5679
Met Ala Ala Asn Pro Ser Lys  Ile Ser Tyr Glu Pro  Ile Thr Thr
    1880                1885                 1890

aca ctc cgg cgc aag cac gaa  gag gtg tcg gcc atg  gtt atc cag         5724
Thr Leu Arg Arg Lys His Glu  Glu Val Ser Ala Met  Val Ile Gln
    1895                1900                 1905

aga gcc ttc cgc agg cac ctg  ctg caa cgc tct ttg  aag cat gcc         5769
Arg Ala Phe Arg Arg His Leu  Leu Gln Arg Ser Leu  Lys His Ala
    1910                1915                 1920

tcc ttc ctc ttc cgt cag cag  gcg ggc agc ggc ctc  tcc gaa gag         5814
Ser Phe Leu Phe Arg Gln Gln  Ala Gly Ser Gly Leu  Ser Glu Glu
    1925                1930                 1935

gat gcc cct gag cga gag ggc  ctc atc gcc tac gtg  atg agt gag         5859
Asp Ala Pro Glu Arg Glu Gly  Leu Ile Ala Tyr Val  Met Ser Glu
    1940                1945                 1950

aac ttc tcc cga ccc ctt ggc  cca ccc tcc agc tcc  tcc atc tcc         5904
Asn Phe Ser Arg Pro Leu Gly  Pro Pro Ser Ser Ser  Ser Ile Ser
    1955                1960                 1965

tcc act tcc ttc cca ccc tcc  tat gac agt gtc act  aga gcc acc         5949
Ser Thr Ser Phe Pro Pro Ser  Tyr Asp Ser Val Thr  Arg Ala Thr
    1970                1975                 1980

agc gat aac ctc cag gtg cgg  ggg tct gac tac agc  cac agt gaa         5994
Ser Asp Asn Leu Gln Val Arg  Gly Ser Asp Tyr Ser  His Ser Glu
    1985                1990                 1995

gat ctc gcc gac ttc ccc cct  tct ccg gac agg gac  cgt gag tcc         6039
Asp Leu Ala Asp Phe Pro Pro  Ser Pro Asp Arg Asp  Arg Glu Ser
    2000                2005                 2010

atc gtg tgagcctcgg cctggctggc caggacacac tgaaaagcag ccttttttcac      6095
Ile Val
    2015

catggcaaac ctaaatgcag tcagtcamaa accagcctgg ggccttcctg gctttgggag    6155

taagaaatgg gcct                                                       6169


<210>  8
<211>  2015
<212>  PRT
<213>  Homo sapiens

<400>  8

Met Ala Asn Phe Leu Leu Pro Arg Gly Thr Ser Ser Phe Arg Arg Phe
1               5                   10                  15
```

```
Thr Arg Glu Ser Leu Ala Ala Ile Glu Lys Arg Met Ala Glu Lys Gln
         20              25              30

Ala Arg Gly Ser Thr Thr Leu Gln Glu Ser Arg Glu Gly Leu Pro Glu
         35              40              45

Glu Glu Ala Pro Arg Pro Gln Leu Asp Leu Gln Ala Ser Lys Lys Leu
    50              55              60

Pro Asp Leu Tyr Gly Asn Pro Pro Gln Glu Leu Ile Gly Glu Pro Leu
65              70              75              80

Glu Asp Leu Asp Pro Phe Tyr Ser Thr Gln Lys Thr Phe Ile Val Leu
            85              90              95

Asn Lys Gly Lys Thr Ile Phe Arg Phe Ser Ala Thr Asn Ala Leu Tyr
            100             105             110

Val Leu Ser Pro Phe His Pro Ile Arg Arg Ala Ala Val Lys Ile Leu
        115             120             125

Val His Ser Leu Phe Asn Met Leu Ile Met Cys Thr Ile Leu Thr Asn
    130             135             140

Cys Val Phe Met Ala Gln His Asp Pro Pro Pro Trp Thr Lys Tyr Val
145             150             155             160

Glu Tyr Thr Phe Thr Ala Ile Tyr Thr Phe Glu Ser Leu Val Lys Ile
            165             170             175

Leu Ala Arg Gly Phe Cys Leu His Ala Phe Thr Phe Leu Arg Asp Pro
        180             185             190

Trp Asn Trp Leu Asp Phe Ser Val Ile Ile Met Ala Tyr Thr Thr Glu
    195             200             205

Phe Val Asp Leu Gly Asn Val Ser Ala Leu Arg Thr Phe Arg Val Leu
    210             215             220

Arg Ala Leu Lys Thr Ile Ser Val Ile Ser Gly Leu Lys Thr Ile Val
225             230             235             240

Gly Ala Leu Ile Gln Ser Val Lys Lys Leu Ala Asp Val Met Val Leu
            245             250             255

Thr Val Phe Cys Leu Ser Val Phe Ala Leu Ile Gly Leu Gln Leu Phe
        260             265             270
```

Met Gly Asn Leu Arg His Lys Cys Val Arg Asn Phe Thr Ala Leu Asn
        275   280   285

Gly Thr Asn Gly Ser Val Glu Ala Asp Gly Leu Val Trp Glu Ser Leu
        290   295   300

Asp Leu Tyr Leu Ser Asp Pro Glu Asn Tyr Leu Leu Lys Asn Gly Thr
305   310   315   320

Ser Asp Val Leu Leu Cys Gly Asn Ser Ser Asp Ala Gly Thr Cys Pro
                325   330   335

Glu Gly Tyr Arg Cys Leu Lys Ala Gly Glu Asn Pro Asp His Gly Tyr
                340   345   350

Thr Ser Phe Asp Ser Phe Ala Trp Ala Phe Leu Ala Leu Phe Arg Leu
        355   360   365

Met Thr Gln Asp Cys Trp Glu Arg Leu Tyr Gln Gln Thr Leu Arg Ser
        370   375   380

Ala Gly Lys Ile Tyr Met Ile Phe Phe Met Leu Val Ile Phe Leu Gly
385   390   395   400

Ser Phe Tyr Leu Val Asn Leu Ile Leu Ala Val Val Ala Met Ala Tyr
                405   410   415

Glu Glu Gln Asn Gln Ala Thr Ile Ala Glu Thr Glu Glu Lys Glu Lys
                420   425   430

Arg Phe Gln Glu Ala Met Glu Met Leu Lys Lys Glu His Glu Ala Leu
        435   440   445

Thr Ile Arg Gly Val Asp Thr Val Ser Arg Ser Ser Leu Glu Met Ser
        450   455   460

Pro Leu Ala Pro Val Asn Ser His Glu Arg Arg Ser Lys Arg Arg Lys
465   470   475   480

Arg Met Ser Ser Gly Thr Glu Glu Cys Gly Glu Asp Arg Leu Pro Lys
                485   490   495

Ser Asp Ser Glu Asp Gly Pro Arg Ala Met Asn His Leu Ser Leu Thr
                500   505   510

Arg Gly Leu Ser Arg Thr Ser Met Lys Pro Arg Ser Ser Arg Gly Ser

Ile Phe Thr Phe Arg Arg Arg Asp Leu Gly Ser Glu Ala Asp Phe Ala
    530   535   540

Asp Asp Glu Asn Ser Thr Ala Gly Glu Ser Glu Ser His Arg Thr Ser
545   550   555   560

Leu Leu Val Pro Trp Pro Leu Arg Arg Thr Ser Ala Gln Gly Gln Pro
                565   570   575

Ser Pro Gly Thr Ser Ala Pro Gly His Ala Leu His Gly Lys Lys Asn
            580   585   590

Ser Thr Val Asp Cys Asn Gly Val Val Ser Leu Leu Gly Ala Gly Asp
            595   600   605

Pro Glu Ala Thr Ser Pro Gly Ser His Leu Leu Arg Pro Val Met Leu
    610   615   620

Glu His Pro Pro Asp Thr Thr Thr Pro Ser Glu Glu Pro Gly Gly Pro
625   630   635   640

Gln Met Leu Thr Ser Gln Ala Pro Cys Val Asp Gly Phe Glu Glu Pro
            645   650   655

Gly Ala Arg Gln Arg Ala Leu Ser Ala Val Ser Val Leu Thr Ser Ala
            660   665   670

Leu Glu Glu Leu Glu Glu Ser Arg His Lys Cys Pro Pro Cys Trp Asn
    675   680   685

Arg Leu Ala Gln Arg Tyr Leu Ile Trp Glu Cys Cys Pro Leu Trp Met
    690   695   700

Ser Ile Lys Gln Gly Val Lys Leu Val Val Met Asp Pro Phe Thr Asp
705   710   715   720

Leu Thr Ile Thr Met Cys Ile Val Leu Asn Thr Leu Phe Met Ala Leu
            725   730   735

Glu His Tyr Asn Met Thr Ser Glu Phe Glu Glu Met Leu Gln Val Gly
            740   745   750

Asn Leu Val Phe Thr Gly Ile Phe Thr Ala Glu Met Thr Phe Lys Ile
            755   760   765

```
Ile Ala Leu Asp Pro Tyr Tyr Tyr Phe Gln Gln Gly Trp Asn Ile Phe
    770             775                 780

Asp Ser Ile Ile Val Ile Leu Ser Leu Met Glu Leu Gly Leu Ser Arg
785                 790                 795                 800

Met Ser Asn Leu Ser Val Leu Arg Ser Phe Arg Leu Leu Arg Val Phe
                805                 810                 815

Lys Leu Ala Lys Ser Trp Pro Thr Leu Asn Thr Leu Ile Lys Ile Ile
                820                 825                 830

Gly Asn Ser Val Gly Ala Leu Gly Asn Leu Thr Leu Val Leu Ala Ile
            835                 840                 845

Ile Val Phe Ile Phe Ala Val Val Gly Met Gln Leu Phe Gly Lys Asn
    850                 855                 860

Tyr Ser Glu Leu Arg Asp Ser Asp Ser Gly Leu Leu Pro Arg Trp His
865                 870                 875                 880

Met Met Asp Phe Phe His Ala Phe Leu Ile Ile Phe Arg Ile Leu Cys
            885                 890                 895

Gly Glu Trp Ile Glu Thr Met Trp Asp Cys Met Glu Val Ser Gly Gln
            900                 905                 910

Ser Leu Cys Leu Leu Val Phe Leu Leu Val Met Val Ile Gly Asn Leu
            915                 920                 925

Val Val Leu Asn Leu Phe Leu Ala Leu Leu Leu Ser Ser Phe Ser Ala
    930     ·           935                 940

Asp Asn Leu Thr Ala Pro Asp Glu Asp Arg Glu Met Asn Asn Leu Gln
945                 950                 955                 960

Leu Ala Leu Ala Arg Ile Gln Arg Gly Leu Arg Phe Val Lys Arg Thr
                965                 970                 975

Thr Trp Asp Phe Cys Cys Gly Leu Leu Arg Gln Arg Pro Gln Lys Pro
            980                 985                 990

Ala Ala Leu Ala Ala Gln Gly Gln  Leu Pro Ser Cys Ile  Ala Thr Pro
            995                 1000                1005

Tyr Ser  Pro Pro Pro Pro Glu  Thr Glu Lys Val Pro  Pro Thr Arg
    1010                1015                1020
```

Lys Glu   Thr Arg Phe Glu Glu   Gly Glu Gln Pro Gly   Gln Gly Thr
    1025   1030   1035

Pro Gly   Asp Pro Glu Pro Val   Cys Val Pro Ile Ala   Val Ala Glu
    1040   1045   1050

Ser Asp   Thr Asp Asp Gln Glu   Glu Asp Glu Glu Asn   Ser Leu Gly
    1055   1060   1065

Thr Glu   Glu Glu Ser Ser Lys   Gln Glu Ser Gln Pro   Val Ser Gly
    1070   1075   1080

Gly Pro   Glu Ala Pro Pro Asp   Ser Arg Thr Trp Ser   Gln Val Ser
    1085   1090   1095

Ala Thr   Ala Ser Ser Glu Ala   Glu Ala Ser Ala Ser   Gln Ala Asp
    1100   1105   1110

Trp Arg   Gln Gln Trp Lys Ala   Glu Pro Gln Ala Pro   Gly Cys Gly
    1115   1120   1125

Glu Thr   Pro Glu Asp Ser Cys   Ser Glu Gly Ser Thr   Ala Asp Met
    1130   1135   1140

Thr Asn   Thr Ala Glu Leu Leu   Glu Gln Ile Pro Asp   Leu Gly Gln
    1145   1150   1155

Asp Val   Lys Asp Pro Glu Asp   Cys Phe Thr Glu Gly   Cys Val Arg
    1160   1165   1170

Arg Cys   Pro Cys Cys Ala Val   Asp Thr Thr Gln Ala   Pro Gly Lys
    1175   1180   1185

Val Trp   Trp Arg Leu Arg Lys   Thr Cys Tyr His Ile   Val Glu His
    1190   1195   1200

Ser Trp   Phe Glu Thr Phe Ile   Ile Phe Met Ile Leu   Leu Ser Ser
    1205   1210   1215

Gly Ala   Leu Ala Phe Glu Asp   Ile Tyr Leu Glu Glu   Arg Lys Thr
    1220   1225   1230

Ile Lys   Val Leu Leu Glu Tyr   Ala Asp Lys Met Phe   Thr Tyr Val
    1235   1240   1245

Phe Val   Leu Glu Met Leu Leu   Lys Trp Val Ala Tyr   Gly Phe Lys
    1250   1255   1260

Lys Tyr Phe Thr Asn Ala Trp Cys Trp Leu Asp Phe Leu Ile Val
    1265   1270   1275

Asp Val Ser Leu Val Ser Leu Val Ala Asn Thr Leu Gly Phe Ala
    1280   1285   1290

Glu Met Gly Pro Ile Lys Ser Leu Arg Thr Leu Arg Ala Leu Arg
    1295   1300   1305

Pro Leu Arg Ala Leu Ser Arg Phe Glu Gly Met Arg Val Val Val
    1310   1315   1320

Asn Ala Leu Val Gly Ala Ile Pro Ser Ile Met Asn Val Leu Leu
    1325   1330   1335

Val Cys Leu Ile Phe Trp Leu Ile Phe Ser Ile Met Gly Val Asn
    1340   1345   1350

Leu Phe Ala Gly Lys Phe Gly Arg Cys Ile Asn Gln Thr Glu Gly
    1355   1360   1365

Asp Leu Pro Leu Asn Tyr Thr Ile Val Asn Asn Lys Ser Gln Cys
    1370   1375   1380

Glu Ser Leu Asn Leu Thr Gly Glu Leu Tyr Trp Thr Lys Val Lys
    1385   1390   1395

Val Asn Phe Asp Asn Val Gly Ala Gly Tyr Leu Ala Leu Leu Gln
    1400   1405   1410

Val Ala Thr Phe Lys Gly Trp Met Asp Ile Met Tyr Ala Ala Val
    1415   1420   1425

Asp Ser Arg Gly Tyr Glu Glu Gln Pro Gln Trp Glu Tyr Asn Leu
    1430   1435   1440

Tyr Met Tyr Ile Tyr Phe Val Ile Phe Ile Ile Phe Gly Ser Phe
    1445   1450   1455

Phe Thr Leu Asn Leu Phe Ile Gly Val Ile Ile Asp Asn Phe Asn
    1460   1465   1470

Gln Gln Lys Lys Lys Leu Gly Gly Gln Asp Ile Phe Met Thr Glu
    1475   1480   1485

Glu Gln Lys Lys Tyr Tyr Asn Ala Met Lys Lys Leu Gly Ser Lys

```
              1490                    1495                    1500


Lys Pro  Gln Lys Pro Ile Pro  Arg Pro Leu Asn Lys  Tyr Gln Gly
     1505               1510               1515


Phe Ile  Phe Asp Ile Val Thr  Lys Gln Ala Phe Asp  Val Thr Ile
     1520               1525               1530


Met Phe  Leu Ile Cys Leu Asn  Met Val Thr Met Met  Val Glu Thr
     1535               1540               1545


Asp Asp  Gln Ser Pro Glu Lys  Ile Asn Ile Leu Ala  Lys Ile Asn
     1550               1555               1560


Leu Leu  Phe Val Ala Ile Phe  Thr Gly Glu Cys Ile  Val Lys Leu
     1565               1570               1575


Ala Ala  Leu Arg His Tyr Tyr  Phe Thr Asn Ser Trp  Asn Ile Phe  ·
     1580               1585               1590


Asp Phe  Val Val Val Ile Leu  Ser Ile Val Gly Thr  Val Leu Ser
     1595               1600               1605


Asp Ile  Ile Gln Lys Tyr Phe  Phe Ser Pro Thr Leu  Phe Arg Val
     1610               1615               1620


Ile Arg  Leu Ala Arg Ile Gly  Arg Ile Leu Arg Leu  Ile Arg Gly
     1625               1630               1635


Ala Lys  Gly Ile Arg Thr Leu  Leu Phe Ala Leu Met  Met Ser Leu
     1640               1645               1650


Pro Ala  Leu Phe Asn Ile Gly  Leu Leu Leu Phe Leu  Val Met Phe
     1655               1660               1665


Ile Tyr  Ser Ile Phe Gly Met  Ala Asn Phe Ala Tyr  Val Lys Trp
     1670               1675               1680


Glu Ala  Gly Ile Asp Asp Met  Phe Asn Phe Gln Thr  Phe Ala Asn
     1685               1690               1695


Ser Met  Leu Cys Leu Phe Gln  Ile Thr Thr Ser Ala  Gly Trp Asp
     1700               1705               1710


Gly Leu  Leu Ser Pro Ile Leu  Asn Thr Gly Pro Pro  Tyr Cys Asp
     1715               1720               1725
```

```
Pro Thr  Leu Pro Asn Ser Asn  Gly Ser Arg Gly Asp  Cys Gly Ser
    1730             1735              1740

Pro Ala  Val Gly Ile Leu Phe  Phe Thr Thr Tyr Ile  Ile Ile Ser
    1745             1750              1755

Phe Leu  Ile Val Val Asn Met  Tyr Ile Ala Ile Ile  Leu Glu Asn
    1760             1765              1770

Phe Ser  Val Ala Thr Glu Glu  Ser Thr Glu Pro Leu  Ser Glu Asp
    1775             1780              1785

Asp Phe  Asp Met Phe Tyr Glu  Ile Trp Glu Lys Phe  Asp Pro Glu
    1790             1795              1800

Ala Thr  Gln Phe Ile Glu Tyr  Ser Val Leu Ser Asp  Phe Ala Asp
    1805             1810              1815

Ala Leu  Ser Glu Pro Leu Arg  Ile Ala Lys Pro Asn  Gln Ile Ser
    1820             1825              1830

Leu Ile  Asn Met Asp Leu Pro  Met Val Ser Gly Asp  Arg Ile His
    1835             1840              1845

Cys Met  Asp Ile Leu Phe Ala  Phe Thr Lys Arg Val  Leu Gly Glu
    1850             1855              1860

Ser Gly  Glu Met Asp Ala Leu  Lys Ile Gln Met Glu  Glu Lys Phe
    1865             1870              1875

Met Ala  Ala Asn Pro Ser Lys  Ile Ser Tyr Glu Pro  Ile Thr Thr
    1880             1885              1890

Thr Leu  Arg Arg Lys His Glu  Glu Val Ser Ala Met  Val Ile Gln
    1895             1900              1905

Arg Ala  Phe Arg Arg His Leu  Leu Gln Arg Ser Leu  Lys His Ala
    1910             1915              1920

Ser Phe  Leu Phe Arg Gln Gln  Ala Gly Ser Gly Leu  Ser Glu Glu
    1925             1930              1935

Asp Ala  Pro Glu Arg Glu Gly  Leu Ile Ala Tyr Val  Met Ser Glu
    1940             1945              1950

Asn Phe  Ser Arg Pro Leu Gly  Pro Pro Ser Ser Ser  Ser Ile Ser
    1955             1960              1965
```

Ser Thr   Ser Phe Pro Pro Ser   Tyr Asp Ser Val Thr   Arg Ala Thr
    1970   1975   1980

Ser Asp   Asn Leu Gln Val Arg   Gly Ser Asp Tyr Ser   His Ser Glu
    1985   1990   1995

Asp Leu   Ala Asp Phe Pro Pro   Ser Pro Asp Arg Asp   Arg Glu Ser
    2000   2005   2010

Ile Val
    2015

<210> 9
<211> 23
<212> DNA
<213> Artificial

<220>
<223> PCR primer

<400> 9
gccagtggct caaaagacag gct   23

<210> 10
<211> 21
<212> DNA
<213> Artificial

<220>
<223> PCR primer

<400> 10
cctgggcact ggtccggcgc a   21

<210> 11
<211> 22
<212> DNA
<213> Artificial

<220>
<223> PCR primer

<400> 11
caccacacat cactgctggt gc   22

<210> 12
<211> 24
<212> DNA
<213> Artificial

<220>
<223> PCR primer

<400> 12
ggaactgctg atcagtttgg gaga   24

```
<210>  13
<211>  22
<212>  DNA
<213>  Artificial

<220>
<223>  PCR primer

<400>  13
gcccagggcc agctgcccag ct                                              22


<210>  14
<211>  26
<212>  DNA
<213>  Artificial

<220>
<223>  PCR primer

<400>  14
ctgtatatgt aggtgcctta tacatg                                          26


<210>  15
<211>  20
<212>  DNA
<213>  Artificial

<220>
<223>  PCR primer

<400>  15
ccaagaagag gatgaggaga                                                 20


<210>  16
<211>  18
<212>  DNA
<213>  Artificial

<220>
<223>  PCR primer

<400>  16
gaggcagtcg ctgacacc                                                   18


<210>  17
<211>  22
<212>  DNA
<213>  Homo sapiens


<220>
<221>  misc_feature
<222>  (1)..(22)
<223>  Acceptor site sequence for exon 18 of SCN5A

<400>  17
ggggtctttt cagcaggaat cc                                              22
```

```
<210>  18
<211>  31
<212>  DNA
<213>  Homo sapiens


<220>
<221>  Unsure
<222>  (20)..(20)
<223>  Unsure about the exact nucleotide from sequencing data

<220>
<221>  misc_feature
<222>  (20)..(20)
<223>  n is a, c, g, or t

<220>
<221>  Unsure
<222>  (22)..(23)
<223>  Unsure about the exact nucleotide from sequencing data

<220>
<221>  misc_feature
<222>  (22)..(23)
<223>  n is a, c, g, or t

<220>
<221>  Unsure
<222>  (31)..(31)
<223>  Unsure about the exact nucleotide from sequencing data

<220>
<221>  misc_feature
<222>  (31)..(31)
<223>  n is a, c, g, or t

<400>  18
ggagtccagc aagcaggaan annaccatgc n                                    31


<210>  19
<211>  45
<212>  DNA
<213>  Homo sapiens


<220>
<221>  exon
<222>  (1)..(27)
<223>  Patial sequence of Exon 17 of SCN5A

<220>
<221>  exon
<222>  (28)..(45)
<223>  Patial sequence of Exon 18 of SCN5A

<400>  19
tgg gca cgg agg gag tcc agc aag cag gaa tcc cag cct gtg tcc          45
Trp Ala Arg Arg Glu Ser Ser Lys Gln Glu Ser Gln Pro Val Ser
1               5                   10                  15
```

```
<210>  20
<211>  48
<212>  DNA
<213>  Homo sapiens


<220>
<221>  misc_feature
<222>  (1)..(27)
<223>  Patial sequence of Exon 17 of SCN5A

<220>
<221>  misc_feature
<222>  (27)..(48)
<223>  Patial sequence of Exon 18 of SCN5A

<400>  20
tgggcacgga gggagtccag caagcagcag gaatcccagc ctgtgtcc                48


<210>  21
<211>  57
<212>  DNA
<213>  Homo sapiens


<220>
<221>  misc_feature
<222>  (1)..(57)
<223>  Partial genomic DNA sequence of SCN5A

<400>  21
gagtccagca agcaggtggg ccctgggtct tttcagcagg aatcccagcc tgtgtcc      57
```